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THE PAPER INDUSTRY and PAPER WORLD

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MARCH, 1942 — VOLUME 23 — NUMBER 12

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COTTRELL PROCESS

of

ELECTRICAL PRECIPITATION

universally recognized as a standard method of removing

DUST, FLY ASH, FUME, MIST & FOG

***from* GASES**

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THIS BAKER TRUCK broke records in 1923!

Still going strong in 1942!!

February 14, 1923

ustrial Truck Division
ker-Raulang Company
, Ohio

Gentlemen:

The new Ram Car went into service yesterday. The first turn handled from the 14" mill was 412000#. She did the work very nicely and efficiently and has made such a difference in the appearance of the place already that the impression created in the minds of wise ones is beyond description. The way will be open for more rams shortly.

Here is something to talk about, a few days ago the 'original' ram loaded a car of 98000# in coils in just 42 minutes. This is a record to shoot at.

Yours very truly,

Nineteen years ago Baker solved a vital handling problem for the Steel Industry, when it introduced the ram truck. The second ram truck ever built was purchased by a large steel producer at Warren, Ohio. In going through some old files, we came across the letter at the right, showing how this truck was received. Immediate savings of 35 man hours per car loading were gained.

Since 1923 the identity of this mill has been lost in a merger. The Steel Industry has expanded to gigantic proportions. Ram trucks have been accepted as standard equipment for handling coils. Yet this pioneer Baker Ram Truck, having handled millions of tons of steel, is still on the job—still turning in its full quota of work, day in and day out.

Long life in an industrial truck depends on advance design as well as on sturdy construction. Baker Trucks are designed to delay obsolescence, and are made to take plenty of abuse without showing their age. Let us demonstrate how they can serve you in your plant.

BAKER INDUSTRIAL TRUCK DIVISION *of The Baker Raulang Company*
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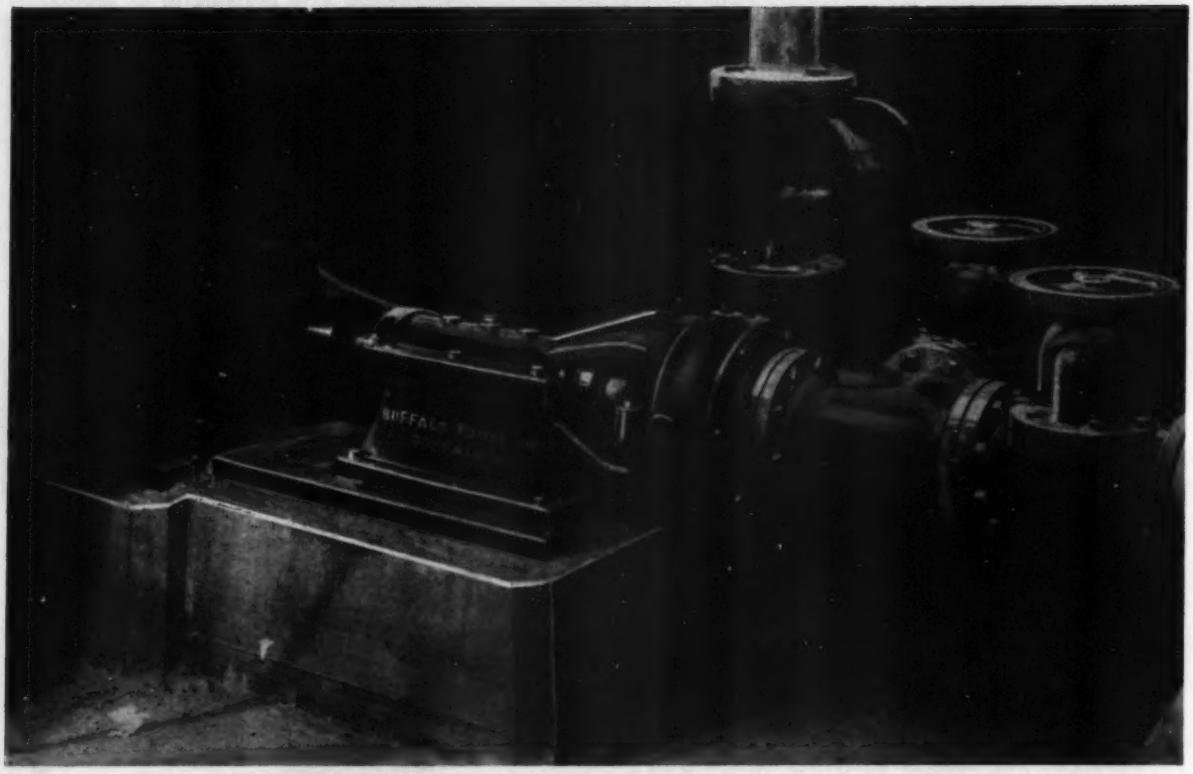
LIGHT WORK
out of
HEAVY PUMPING



● It's no easy job to keep tons and tons of heavy paper stock on the move—and take the jolts of sudden changes in stock consistency. But Buffalo Full Ball-Bearing Pumps, with their non-clogging impellers, measure up to the severest demands. Here's the sure way to transfer any kind of stock, without the worry of break downs and delays—the economical way to keep production on schedule. Full engineering details in Bulletin 953-F.

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213 Mortimer St., Buffalo, N. Y.

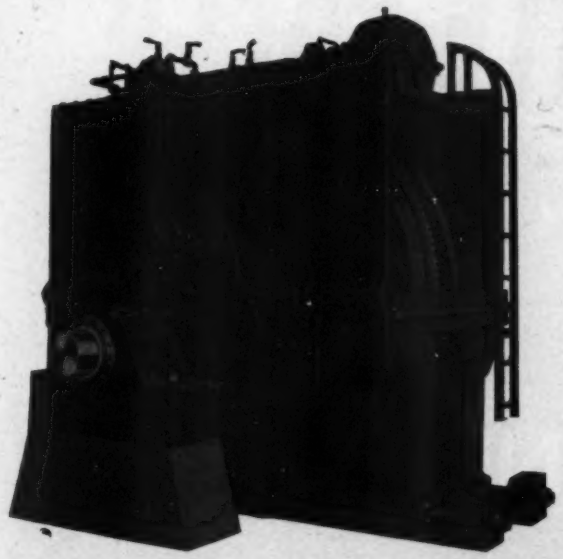
Branch Engineering Offices in Principal Cities.
Canada Pumps, Ltd., Kitchener, Ont.

"Buffalo" **PAPER STOCK PUMPS**

FACTS

The Roberts Grinder grinds more pulp. This high-speed continuous grinder is manufacturing up to 50 tons of groundwood every 24 hours in American and Canadian newsprint mills. Production is limited by the maximum speed limits of the stone, the power input and the required freeness of the pulp. There is no down-time. The wood is fed to the stone continuously. No wonder that the Roberts Grinder grinds more pulp—in less time.

It also manufactures groundwood at lower cost. Power and labor savings are important economy features. Less power is needed per ton of pulp. Savings in labor run as high as 70%. On one installation, one operator loads two grinders with approximately 100 cords of wood every twenty-four hours. Simplified design with fewer moving parts and rugged construction have reduced maintenance and eliminated service interruptions. There is less waste, pulp quality is improved. Operating advantages save time and money. One mill superintendent has said "The saving that is apparent in our mill, where we make about 110 tons of groundwood per day, is roughly about $50,000 per year, and this is estimated from our tests to be the result of savings in: power, labor, sawdust, repairs, auxiliary equipment and auxiliary power."



ROBERTS Continuous GRINDER

Only slight mill change is necessary to install the Roberts Grinder. It replaces 3 to 4 pocket grinders yet takes little more floor space than a single 3 pocket grinder, requires no greater head-room, no auxiliary equipment. This new continuous grinder makes a long jump ahead in the manufacture of groundwood. Many major construction improvements are concentrated in the Roberts Grinder. High-speed grinding is a demonstrated success. It is a faster and more profitable way to grind pulp for paper. Let us give you all of the details and comparative performance figures.

THE APPLETON MACHINE COMPANY
APPLETON · WISCONSIN

In Canada—F. W. ROBERTS MANUFACTURING COMPANY OF CANADA, Limited, Niagara Falls, Ont.

SAVE WASTE PAPER
AMERICA NEEDS IT

TRADE WINDS

Appleton's Wastepaper Plan

▶▶▶ THE CITY OF APPLETON, Wisconsin, has turned to the recovery of wastepaper for the war effort with the same characteristic energy which has made it an important city in the nation's paper industry. All classes of its people have co-operated with such effect that the Federal Government has commended "the Appleton Plan" as a model for smaller American cities.

The plan calls for the division of a city into small zones, in which each home is visited at regularly stated intervals for the collection of old paper, thereby recovering much paper not commonly tapped by commercial sources.

In Appleton, the plan went into effect in December, when the entire city was canvassed. The city is divided into four districts, one of which is canvassed each Saturday. Districts average about 7,000 in population, and as much as 26,000 pounds of paper has been collected in a single district.

Appleton business men devised the plan, after conferring with paper experts and OPM officials. Their primary objective was to recover as much as possible of the 75 per cent of wastepaper which surveys have shown cannot be collected through ordinary channels. This includes the scrap paper which is difficult to pack into bundles and which, as a result, usually winds up in the furnace.

Roy McNeil, an insurance man, coordinates the collection activities on a salaried, part-time basis. After deduction of administrative expenses, proceeds go to the Boy and Girl Scouts, who do much of the actual work.

Operations under this plan are actually very simple. Each week, in the district to be canvassed, housewives place their boxes and bundles of wastepaper on their porches or at the curb, Scouts with badges to indicate that they are authorized collectors cruise the districts in trucks, checking each house to insure thorough and efficient coverage of the entire district.

Weekly collections have averaged from 7 to 12 tons, for which dealers have paid $14 per ton. Modern publicity methods have been used to keep the necessity of paper conservation in the minds of Appleton residents. Dramatic students at Lawrence College recently presented two radio skits on paper conservation. The programs included talks by Mayor John Goodland, general chairman of the campaign, and John H. Neller, chairman of the executive committee.

The Technical Association of the Pulp and Paper Industry is said to be preparing copies of this plan for distribution. The copies, it is expected, will be distributed to mills which belong to the Association. City officials also have prepared to make details of the plan available to other communities.

◆

STATE OF MICHIGAN ORGANIZES TO AID PAPER SALVAGE

Michigan paperboard mills have set up a state-wide organization to assist in uncovering additional supplies of wastepaper needed to avert serious paper shortages.

About twelve "field men" have been designated throughout the state to co-ordinate paper salvage work being

Recognizing the importance of wastepaper in the national defense program, The Mead Corporation, Chillicothe, Ohio, commissioned John Milligan, artist, to design a poster that would graphically emphasize the urgent need for the conservation of wastepaper. Reproduced on the opposite page is the dramatic result. The Mead Corporation has received highest recognition from various officials of the OPA at Washington for this poster.

done by such agencies as the Boy Scouts, schools, Salvation Army, without by-passing dealers equipped to handle the paper. Each participating board mill pays to a central committee a certain amount of money for each ton of board produced, this money being used to finance the project.

Gordon Bonfield is chairman of the wastepaper conservation committee, and he supervises activities of the dozen "field men" from his headquarters in Grand Rapids. The committee is working closely with the county "Salvage for Victory" committees set up throughout Michigan by the Michigan Council for Defense and allied county defense councils.

◆

PAPER PRODUCTS MFRS. AIDED BY WASTE SALVAGE

The last week in February, O. M. Bonesho, purchasing agent for the Hummel & Downing Company, Milwaukee, one of the major paper box manufacturing firms in the country and a large user of wastepaper, said that results of the paper salvage campaign being carried on under the defense program are being felt by manufacturers of paper products.

He said that the Milwaukee mill now has a surplus stock of raw materials for the first time in months, and that until the effects of the salvage drive became felt, the mill had been operating "from hand to mouth" so far as raw materials were concerned. In fact, the mill's supply often ran only 24 hours ahead of production requirements.

Bonesho stated further that even though the mill is operating on a seven-day week basis, the present existing surplus stocks are being expanded.

A survey to determine why Milwaukee county residents placed so few calls for paper collectors was completed recently by John Wendt. Mr. Wendt is a representative of a St. Louis advertising agency which is handling the paper salvage campaign with the sanction of federal defense officials.

He found that the city has 1,100 different collecting groups, including many Boy Scout units, churches, charitable organizations, and private dealers. This results in a thorough coverage of the city, Wendt reported, and automatically cuts down the number of calls. He said the Milwaukee salvage office receives only about 40 calls a day as compared with 1,500 received by the Chicago office.

FINANCIAL

Paper company securities shared in the general drop in prices which followed the fall of Singapore and other Allied reverses in the South Pacific. Paper mill earnings showed material increases, however, in spite of the mounting total of war taxes.

American Box Board Company—This company had outstanding $1,139,660 par value of 7 per cent Cumulative Preferred stock due on December 12, 1953. As of December 1, 1941, the company put into effect a plan whereby $1,000,000 par value of said Preferred stock has been or will be exchanged for $1,000,000 par value of 7 per cent Convertible Debentures of the company. The remainder of the outstanding Preferred stock has been called for redemption.

The company has also authorized an issue of its 7 per cent Registered Notes. These cannot be issued, however, unless an equivalent amount of 7 per cent Convertible Debentures have first been retired or their retirement provided for. This limits the aggregate amount of the two issues to $1,000,000.

American Writing Paper Corporation—Net profit for 1941 was $403,208.90 as against $88,709 for 1940.

Brown Company—The directors have voted to repay at once $1,660,056 of the R.F.C. loan of $4,500,000 which was not due for some time. The prepayment will save the company $66,000 in interest charges.

Consolidated Paper Corporation—Net profit for 1941 was $1,456,281, as against $1,267,063 for 1940.

Robert Gair Company, Inc.—A quarterly dividend of thirty cents per share in respect of the first quarter of the year 1942 was declared on the Preferred stock of the par value of $20 per share, payable April 1, 1942, to stockholders of record at the close of business on March 17, 1942, without the closing of the transfer books.

The full 6 per cent interest on Robert Gair Company, Inc., Income Notes 1972's, payable April 1, 1942, to the holders of record at the close of business March 31, 1942, was also declared.

Masonite Corporation—Net profit for sixteen weeks to December 20 was $458,598, as against $343,527 for the comparable period in 1940.

Puget Sound Pulp & Timber Company—Net profit for 1941 was $1,121,730 as against $795,553, despite an increase in the federal tax from about $600,000 to about $2,000,000.

Rhinelander Paper Company—Net profit for nine months ending September 30 was $524,148 as against $305,841 for the same period in 1940.

Strathmore Paper Company—Net profit for ten months ending October 31 was $240,371 as against $261,871 for the full year of 1940.

Sutherland Paper Company—Net profit for 1941 was $818,055 as compared with $813,926 for 1940.

Taggart Corporation—Net profit for 1941 was $820,130 as against $548,774, the largest profit since 1929.

Union Bag and Paper Corporation—Net earnings for 1941 were $2,168,313 as against $2,134,391 for the preceding year, a slight increase in spite of an increase of 112 per cent in federal taxes.

New York Stock Exchange—Stocks

	Closing Prices Jan. 21, 1942	Feb. 25, 1942
A. P. W. Paper Co.	*1¼–1⅜	1½
Celotex	7¼	7⅞
Same Preferred	66	*69¼–71
Certain-Teed	*2–2¼	2¼
Same Preferred	28	27⅞
Champion P. & F. Co.	17	*16½–17¾
Same Preferred	99¾	*98–101
Container Corp.	*12¼–12½	12¾
Cont. Diamond	8	*7¾–7⅞
Crown Zellerbach	10¾	11⅜
Same Preferred	*79½–80⅜	86½
Dixie Vortex	*8¼–8⅞	*8⅛–8⅜
Same "A"	*33–35	*34–35
Robert Gair	2	2
Same Preferred	*9¾–10¾	10¼
Gaylord Container	10⅛–10¼	9¾
Same Preferred	*50¾–52½	*51–52½
International Paper	14	14⅞
Same Preferred	58	59
Kimberly-Clark	*27¾–28	27–28½
MacAndrews & Forbes	*20–21	21¾–23
Masonite	*26½–27	25¼
Mead Corp.	*6–6½	6⅛
Same Preferred	*72½–79	58
Paraffine Co.	25	24
Same Preferred	*90–98	*99–105
Rayonier	9½	10⅜
Same Preferred	25	25
Scott Paper	*31–32½	35½
Same 4½% Pfd.	114⅛	114
Same 4% Pfd.	*108–110½	*107–110
Sutherland Paper	*18½–19½	*17⅜–18
Union Bag & Paper	8¾	9
U. S. Gypsum	45¼	46¼
Same Preferred	*169½–177½	*168–171½

New York Stock Exchange—Bonds

Abitibi 5%	-------	-------
Celotex 4½%	-------	95
Certain-Teed 5½%.	84¼	84¾
Champion P. & F. Co.	102¼	-------
Inter. Paper 5%	-------	-------
Inter. Paper 6%	-------	-------

New York Curb Exchange—Stocks

Am. Boxboard	-------	4
Great Northern	-------	-------
Hummel-Ross	-------	-------
Nat. Container	-------	-------
St. Regis	2⅛	2⅜
Taggart	3¼	-------
United Wall Paper	1⅛	-------

*Closing Bid and Asked Prices.

PAPER · · · America's 6th Industry

MUNITIONS . . . AND WOOD PULP

(*NEWS ITEM: More than 125,000 tons of Wood Pulp will be requisitioned by the government this year for the manufacture of nitrated cellulose explosives.*)

Wood Pulp is rapidly becoming the primary source of cellulose for munitions—one of the many new uses for paper in the Victory program.

War requirements, direct or indirect, are claiming 52 per cent of the total production of container board, 43 per cent of paper board, 80 per cent of building paper, 20 per cent of kraft wrapping paper.

The U.S. Government Printing office alone is using more than 100,000 tons of paper a year, of which almost three-fourths is directly tied up with America's war effort.

How paper production can be speeded up to meet war-time needs is the 24-hour a day concern of Puseyjones engineers.

A recent development is the Puseyjones Simplex Press Arrangement, which meets the urgent need for increased tonnage with existing machines. Incorporated in the design is the latest type of controlled pneumatic loading, a simplified time-saving arrangement for installing felts and an independent draw adjustment between the several presses.

The Puseyjones Simplex Press Arrangement considerably reduces the space occupied by the Press part and thus allows for the installation of additional dryers to speed up production.

Keeping paper production at the point of highest efficiency is not only essential to Victory, but also best for the tremendous competition coming after the present emergency is over.

THE PUSEY AND JONES CORPORATION

Established 1848. Builders of Paper-Making Machinery

Wilmington, Delaware, U.S.A.

THE SIGN OF TRADE MARK SUPERIOR QUALITY

SUTHERLAND RESIGNS: RUTLEDGE NOW PRESIDENT

▶▶▶ The Sutherland Paper Company, Kalamazoo, Michigan, experienced its most successful 12-month period in 1941, President L. W. Sutherland announced in February prior to his resignation. Mr. Sutherland, president and co-founder of the company, submitted his resignation to the board of directors at its annual meeting in Kalamazoo February 17.

L. W. Sutherland

R. E. Rutledge

The board immediately named him its chairman, and appointed Robert E. Rutledge, executive vice president since 1940, as president.

The company's payroll for 1941, including bonus dispensations, amounted to $4,289,053, as compared with the next-best total of $2,830,087 in 1940. Total net sales for the year were $12,842,000, against $10,315,000 for the preceding year.

The company spent $667,000 for plant improvements in 1941, with $182,000 of that amount going for buildings and land and $485,000 for machinery and equipment. Two major improvement projects are planned for 1942, according to Sutherland: The paper machine in Plant No. 1 will be enlarged to increase tonnage on that machine by about 25 tons a day, and Machine No. 3 in Plant No. 2 also will be enlarged, increasing tonnage by 30 tons a day. With these improvements, costing about $350,000, the mill's tonnage capacity will be above 400 tons daily.

Mr. Sutherland, with his brother, the late Fred Sutherland, and Oscar Gumbinsky, also deceased, founded the container manufacturing concern 25 years ago this April 17. L. W. Sutherland had remained its president through all the years, guiding it from its growth of a plant worth only a few thousand dollars to one which now ranks among the greatest carton manufacturing concerns in the United States.

Rutledge, the new president, is 49, and is a native of New Madrid, Missouri. He came to Michigan in October, 1928, and was with the Mac-Sim-Bar Paper Company, Otsego, as a salesman for 1½ years before joining the Sutherland organization as a salesman. He became Sutherland's sales manager in 1932, a vice president in 1935, and a member of the board of directors in 1937. He also is a director of Beach Products, Inc., Kalamazoo carton manufacturers.

Other officers and directors of the company were re-elected: Vice presidents, Glen E. Graham and A. J. Young; secretary-treasurer, William L. Race; and directors, in addition to Sutherland, Rutledge, Graham, and Young, are E. W. Chase, L. M. Crockett, Dr. L. H. S. DeWitt, F. B. Eilers, Charles H. Farrell, C. F. Miller, Walter L. Otis, and E. A. McQuade, New York City. The office of executive vice president was abolished. The post of board chairman is a newly-created office.

▶▶▶ STUDENTS AND TEACHERS of the Forestry Surveying and Engineering School held their annual banquet in Quebec City on February 7, the guest of honor being the Honorable Pierre Emile Cote, Minister of Lands and Forests of the Province of Quebec. Also present was Avila Bedard, Deputy Minister of Lands and Forests; Canon Cyrille Gagnon, Assistant Rector of Laval University; and Robert Bellefeuille, president of the Province of Quebec Association of Forestry Engineers. Speakers at the banquet emphasized the important role that forestry would play in the future of the country and urged conservation and development of the forests of the province.

◆

WATER STANDARDS KALAMAZOO RIVER DEFERRED A YEAR

Imposition of water standards on the Kalamazoo River has been put off until October, and possibly until 1943, by the Michigan stream control commission.

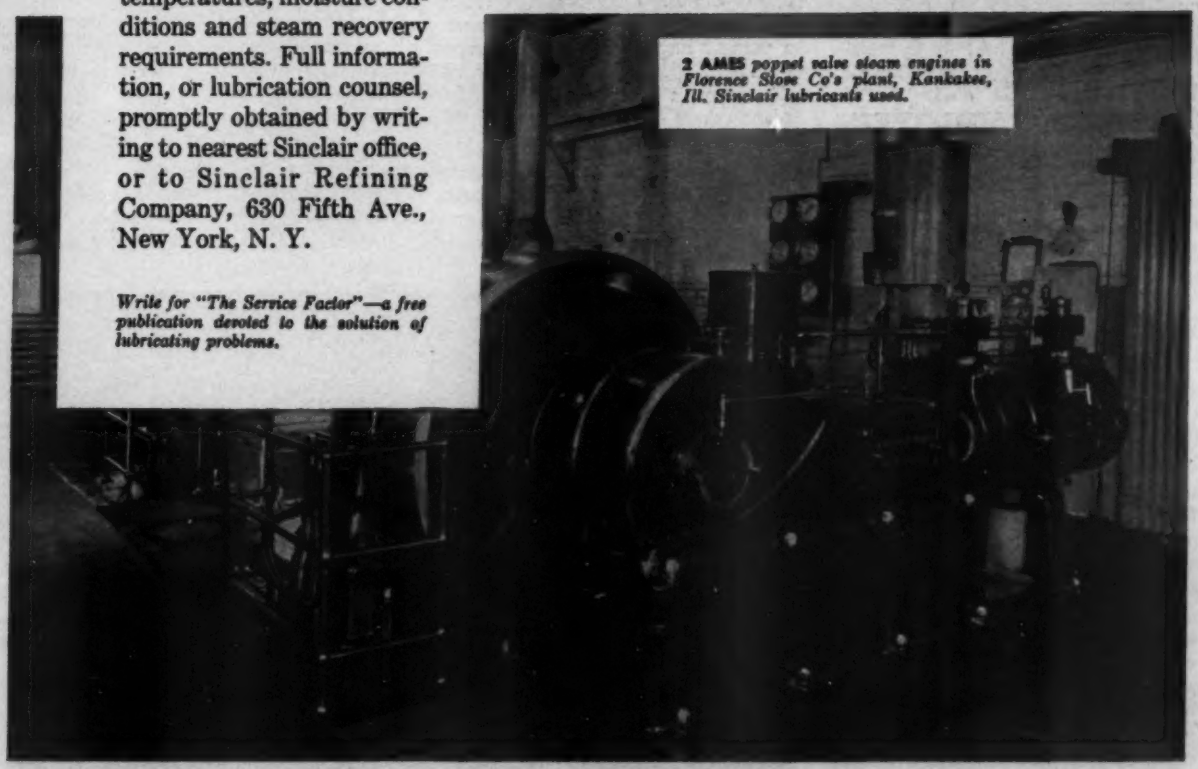
At a meeting in Lansing in February, the commission discussed the possible imposition with Harry Bradford, Rex Paper Company, chairman of a paper industries research committee studying the problem of paper mill waste pollution in the Kalamazoo River, and with E. F. Eldridge, of the Michigan State College experimental station, who has been consultant to the research committee.

The commission expressed gratification at progress made toward solving the problem by the paper mills, but said the research committee should not slacken its efforts. Eldridge told the commission he needed at least six months to make pilot plant tests at various Kalamazoo Valley paper plants. He said board mill wastes probably can be handled by coagulation and sedimentation of suspended solids, possibly achieving a 60 per cent removal of oxygen demand and 90 per cent removal of suspended solids from the river water. A commission source said 70 per cent removal of oxygen demand and 95 per cent removal of suspended solids probably was necessary. According to Eldridge, white water wastes of the book mills should be re-used more by the existing plants. The Kalamazoo Vegetable Parchment Company may require improved or enlarged pending arrangements, he said. He said he had made little progress in finding industrial uses for the mill wastes.

WAR SPEED-UP cannot be *safely* maintained with inadequate lubrication. For the *safe* lubrication of *STEAM ENGINES* there are . . .

. . . SINCLAIR STEAM CYLINDER and VALVE OILS supported by a long record of perfect performance in heavily loaded installations. No matter how difficult the operating conditions may be, there are Sinclair oils exactly suited to your plant's pressures, temperatures, moisture conditions and steam recovery requirements. Full information, or lubrication counsel, promptly obtained by writing to nearest Sinclair office, or to Sinclair Refining Company, 630 Fifth Ave., New York, N. Y.

Write for "The Service Factor"—a free publication devoted to the solution of lubricating problems.



2 AMES poppet valve steam engines in Florence Stove Co's plant, Kankakee, Ill. Sinclair lubricants used.

SINCLAIR INDUSTRIAL OILS

SINCLAIR REFINING COMPANY (Inc.)

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PRICE OF PULPWOOD FIXED BY CANADA

The Wartime Prices and Trade Board announced on February 11 that Timber Administrator A. S. Nicholson has fixed selling prices of pulpwood for domestic consumption everywhere in Canada except British Columbia and Alberta at highest corresponding prices between July 1 and December 1, 1941. Pulpwood produced and sold for licensed export is not affected by the order.

The ruling covers spruce, balsam, jack pine, and poplar pulpwood, either in the form of cordwood or logs. Persons who did not sell such pulpwood in any part of Canada east of Alberta during the basic period will be permitted to add 15 per cent to the highest lawful price at which they sold pulpwood of the same kind and quality during the first six months of 1941.

All agreements or commitments made after November 30, 1941, for sale of pulpwood affected by the order must be submitted to Mr. Nicholson for approval.

◆

C-Z HONORS ITS VETERAN EMPLOYEES

J. D. Zellerbach, president of Crown Zellerbach Corporation, San Francisco, pledged his company to a greater contribution to the war effort in a talk February 19 at a banquet in honor of veteran employees of the Camas division of the company. One hundred forty-one workers received service pins during the evening.

"We are working on plans now which will fit this organization to the war effort to a much greater extent than now," Mr. Zellerbach said. He disclosed that a meeting had been held in Portland, Oregon, just the day before of managers of Pacific Northwest mills of the corporation to discuss ways and means of developing specific plans for the company's all-out effort.

Mr. Zellerbach foresaw the curtailment of production of some "nonessential" paper products in favor of grades more directly needed, and a much wider use of paper for packaging.

"Our company, and others in the paper industry, are determined first, to do all we possibly can to help win this war, and secondly, to keep our employment as steady and uninterrupted as conditions will permit."

After his talk, Mr. Zellerbach presented service pins to the employees. Oldest in point of service was Clarence C. Coulson, who has been with the Camas division for 40 years. Thirty-five-year emblems were presented to Grant Salisbury and Erma Stout, thirty-year pins to Ed Confer, Herbert Duvall, Cliff M. Koplin and Louis Gfeller, and twenty-five-year pins to Everett F. Baker, V. C. Gault, L. W. Morgan, and Joseph H. Hoxsie. Other pins went to employees with service records of five to twenty years. Honored "in absentia" were eight five-year employees who are now in the nation's armed forces.

Alexander R. Heron, director of industrial relations of Crown Zellerbach, was toastmaster at the dinner, and Ed P. Stamm, logging manager, the principal speaker. His topic was "Trees for Tomorrow."

◆

SPAULDING FIBRE GETS LEASE FROM CITY OF DOVER

Signing of a lease by the Spaulding Fibre Company of Rochester, New Hampshire, on February 21 for one floor of the Number One Mill, property of the City of Dover, New Hampshire, marked the conclusion to nearly a year of negotiations between representatives of the City of Dover and the company. The lease for the Dover plant covers a two-year period, with optional renewal up to 20 years.

As a result of the signing of the lease, the North Main Street, Rochester Branch, operated by the former New Hampshire Governors Huntely and Rolland Spaulding, will be moved to Dover.

The branch is operating at nearly double its normal capacity and now employs about 60 people at Rochester. It is expected that it will require about 125 employees when in operation in its new quarters.

◆

PROPOSE PLAN TO EXPAND TASMANIA NEWSPRINT MILL

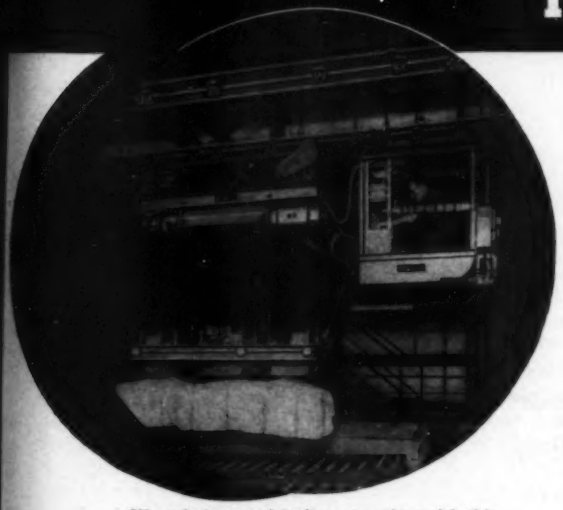
Australian Newsprint Mills Proprietary Limited, Tasmania, which began production in April, 1941, is maintaining an output of 400 tons of newsprint a week. With improvements now in effect, it is expected that production will be stepped up to 26,800 tons a year. Because of rationing and the desire to assist the Government in conserving the dollar resources, strong efforts are being made to expand the production of the Tasmanian mill, with plans to produce a further 40,000 tons of newsprint a year. This will involve an expenditure of about $2,250,000 and, if accomplished, will produce almost enough newsprint for Australia on the present rationing basis.

The extension is supported by all the newspapers which are shareholders in the newsprint company, and other publishers have promised substantial financial support if the project is continued.—(*Foreign Commerce Weekly*)

J. D. Zellerbach (center), president of Crown Zellerbach Corp., presents C. C. Coulson (left), of the Camas (Wash.) Division of the company, with 40-year service pin. V. C. Gault (right), personnel manager of Camas Division watches presentation.

This pulp handling system is hand-propelled with electric hoists. By means of interlocks all sections of the system may be connected, thus permitting the pulp to be moved directly to destination without rehandling.

HANDLE PULP the OVERHEAD WAY
FAST! ECONOMICAL! SAFE!



Three bales are picked up at a time with this patented Cleveland Tramrail screw grab. Motor-driven screws secure and release bales without operator leaving cab.

More pulp can be handled in less time with a Cleveland Tramrail overhead system. The usual hard manual work can be greatly eased and safety bettered. Costs can be reduced considerably.

Cleveland Tramrail is built for hand or electric operation. The pulp storage room shown above makes use of easy rolling hand-propelled cranes equipped with electric hoists that do the heavy lifting. Where a completely electrified system is desired, a motor-driven screw-type grab as illustrated at left will speed handling tremendously.

When pulp is transported overhead, all troubles of floor interference are eliminated. Aisles need not be provided and the space thus saved can be used for storage. Bales of pulp can be piled higher. Thus storage capacity of a room can be increased greatly.

CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
1165 EAST 283rd ST. WICKLIFFE, OHIO.

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CLEVELAND TRAMRAIL

OVERHEAD MATERIALS HANDLING EQUIPMENT

Washington News

INDUSTRIALISTS PROMINENT ON STAFF OF WPB

The strengthening of the War Production Board by inclusion of business men in its already large staff has continued during the past month, and many additions have been made affecting the paper industry. One of the most important is the assignment of John R. Kimberly of the Kimberly-Clark Corporation to become head of the new Industrial Machinery, Transportation, Communications, Pulp and Paper and Printing and Publishing divisions as supervisor of all five, whereas he was formerly head of Industrial Machinery only in the OPM.

Albert F. Miller, formerly a vice-president of the Central Ohio Paper Co., has been named senior specialist and head of the fine paper division of the paper distributors unit in OPA.

Paper men have also been named for other governmental positions, outside of the War Production Board organization. George H. Mead, newly elected president of the American Paper & Pulp Association, has been named an alternate member on the War Labor Board. Reuben B. Robertson, Sr., executive vice president of the Champion Paper and Fibre Company, has been made a member of the Business Advisory Council of the Department of Commerce. Harry E. Houghton, general sales manager of the Brown Company, has been made merchandising consultant to Paul V. McNutt, Federal Security Administrator, for the formulation of a national nutrition merchandising plan for the Office of Defense Health and Welfare Service.

▶▶▶ EIGHT MANUFACTURERS OF liquid tight paper containers have been charged by the Federal Trade Commission with price fixing.

▶▶▶ THE FIXING OF WORKABLE PRICE CEILINGS for various grades of waste paper continues to be a headache for OPA. Various changes have been made in the original price ceiling schedule, but there is still difficulty in adjusting such problems as transportation costs, brokerage fees, and correct grading of waste paper.

▶▶▶ PRICE CEILINGS for gummed paper, envelopes of various types, and glazed and fancy papers have been frozen as far as manufacturers are concerned, and steps are being taken to prevent excessive mark-ups by merchants above the mill prices.

▶▶▶ CHANGES ARE BEING MADE in details affecting the ceilings of papermaking rags, increasing the number of grades, and providing for transportation costs.

▶▶▶ THE NEXT CUT IN THE USE OF CHLORINE will practically eliminate the use of any bleaching from practically every grade of paper, and is expected to become effective about April 1. There will be no bleaching permitted of sulphite pulp, and the brightness of kraft pulp will be held to 55.

▶▶▶ A VOLUNTARY PRICE AGREEMENT has been reached establishing a maximum price schedule for set up box and folding cartons, based on the prices in vogue last October.

▶▶▶ THE JANUARY ALLOCATION of pulp for nitrating purposes was increased for February to 8,400 tons, as against 4,200 tons in January, and all is provided by Rayonier. Other producers are required to provide a pool to supply Rayonier customers with the quantities of pulp thus lost to them, and some mills fear that they will be required to provide pulp for the operation of converting mills while their own paper machines lack sufficient pulp to keep in full operation.

◆

PAC. COAST MILLS FOLLOW INDEX FIGS.

Salaried employees of Crown Zellerbach Corporation, Rayonier, Inc., and Fibreboard Products Company, who are not covered by collective bargaining agreements, received late in February "cost of living" adjustment checks in addition to their regular monthly compensation. The adjustment checks probably will be issued every month until the end of the war.

The percentage of adjustment is based on the average of index figures of Pacific coast living costs as compiled by the United States Bureau of Labor Statistics, and the measuring stick for the first three months of 1942 will be the increase in this average figure for the three months ending January 15, or five per cent. In subsequent quarters the amount of the adjustment will be determined by fluctuations in the indexes.

◆

HAMMERMILL MEN SERVE IN DEFENSE TRAINING COURSE

In line with the times, the defense training program at the Pennsylvania State College, Erie, Pennsylvania, has been stepped up to provide between 2,000 and 3,000 skilled workers for Erie industries by the beginning of summer.

Among industrialists who are serving to conduct courses are the following officials of The Hammermill Paper Company: R. T. Sternberg, power superintendent, instructor in thermodynamics and power generation; H. L. Dyer, electrical engineer, course in industrial electricity; A. J. Aubin, designer, class in drafting.

◆

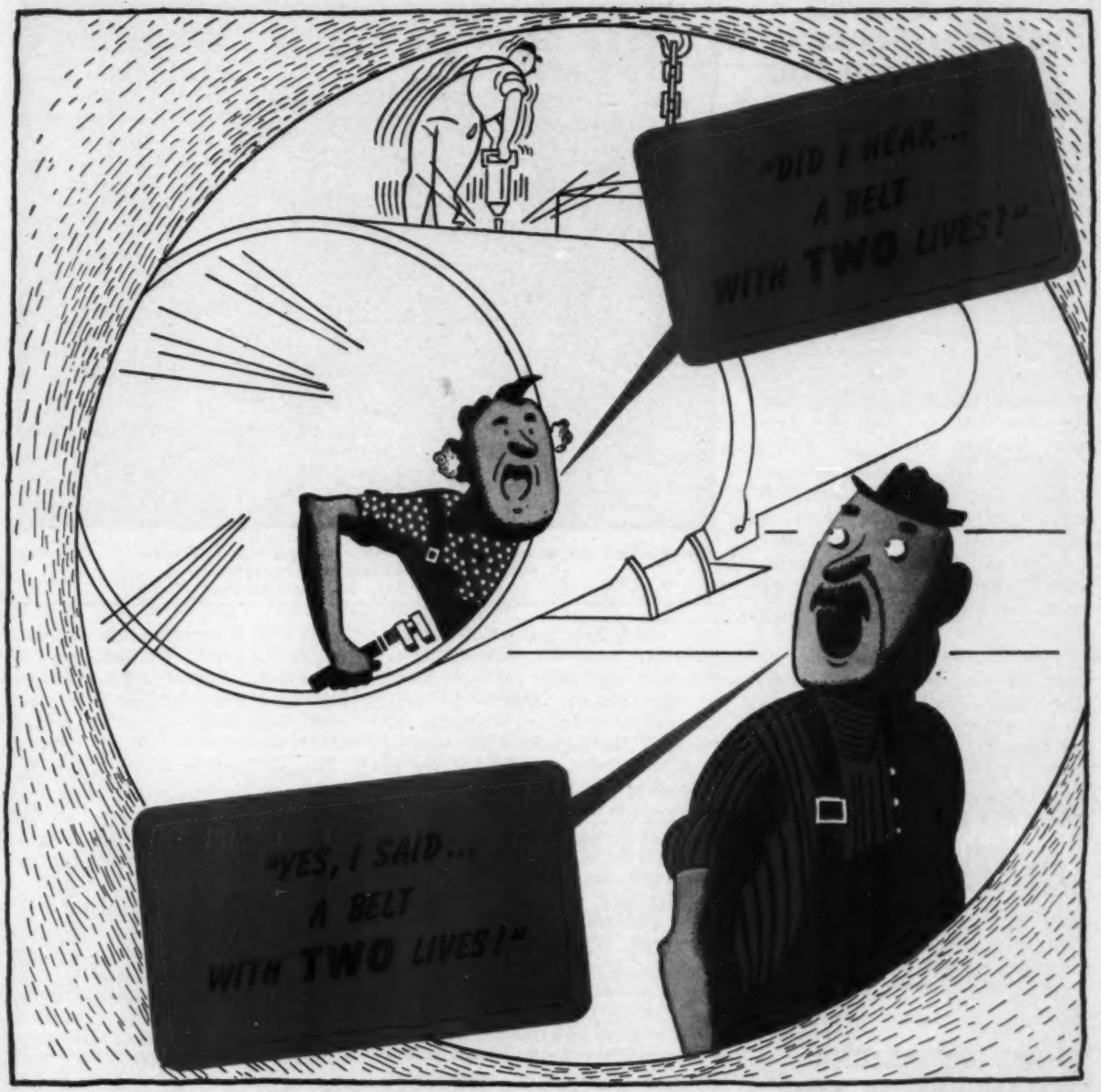
▶▶▶ SINCE HIS COMPANY became a member of the American Paper and Pulp Association in 1902, George W. Sisson, Jr., president of the Racquette River Paper Company, Potsdam, New York, has attended every annual meeting of the Association.

◆

KEYES MEMORIAL BEQUEATHED TO COLBY COLLEGE

Under the provisions of the will of the late Jennie C. Keyes, widow of Martin Lynman Keyes, founder of the Keyes Fiber Company, Waterville, Maine, a bequest of $175,000 is left to the president and trustees of Colby College of Waterville to be invested and used in the erection, equipment and maintenance of a science building. The fund is to be known as the Martin L. and Jennie C. Keyes Fund, and the building will be named the Keyes Building.

Franklin W. Johnson, president of Colby College, said that the fund provided for the eighth new building on the college campus, and that of the three science buildings planned for the new campus, the Keyes Chemistry Memorial will be the largest.



Lower Belt Costs... Steadier Production... with waterproof Research Leather Belting

On pivoted motor base drives, Research Belting's "built-in" pulley grip and extra pliability relieve tension and flexing-wear — thus increasing leather's normal 2-to-1 service advantage over rubber belts. Ideal for beaters (where overloads are frequent), jordans with small pulleys, pumps that must not stop, chippers, etc.

On fixed center drives — especially paper machines involving high speeds, high torque, cone pulleys — low stretch, high-capacity Research delivers more power, maintains uniform speed, reduces interruptions for takeup. Wherever production must be continuous, use Research.

A more expensive belt can't give you more. No other belt can give you as much.

Research Leather Belting on Pivoted Motor Base Drive (Production Drive)

Graton & Knight Co. Worcester, Massachusetts
Only leather belting manufacturer with complete nationwide service facilities. Distributors listed

DEXTER SULPHITE PLANT DAMAGED BY THIRD FIRE

Following the damage to its plant by fire on January 28, which necessitated extensive repairs to buildings and equipment, the Dexter Sulphite Pulp and Paper Company of Dexter, New York, resumed full-scale operations February 23.

This was the second of three recent fires on the company's property. The first fire, about a week earlier, destroyed a small tool shed in the yard with only a slight loss in the building itself and some yard tools. The first fire originated in an over-heated stove. The second fire was caused by a short circuit in a fuse box.

The third fire, occurring February 15, destroyed two buildings and an auxiliary generator. The origin of this fire is undetermined; since the mill was shut down for repairs, the generator was not in use. Although this damage was extensive, it will not curtail production.

Normally, waterpower from the Black River is used to generate electricity for operation. The main powerhouse situated in back of the ruins remains intact, and arrangements are completed for the purchase of auxiliary power from other sources. The sulphite division produces about eighty tons a day.

As this issue goes to press, it is reported that Canadian interests are negotiating for the purchase of the Dexter company. Attorney A. Raymond Cornwall, of Watertown, New York, is counsel for the equity receivers. He has confirmed the fact that the transaction is pending.—EDITOR'S NOTE.

◆

RIGHT OF ALIENS TO APPEAR IS NOW BEFORE CUSTOMS CT.

A recent decision by the United States Supreme Court that enemy aliens have no rights of appearance in United States Courts may apply to all cases pending in the United States Customs Courts in which enemy aliens are a party, according to Warren B. Bullock, manager of the Import Committee of the American Paper Industry. The ruling may also deny to enemy aliens any right of protest in the courts against decisions by Customs officials. The extent to which this decision may involve Customs problems is now being studied by Treasury Department and Department of Justice officials, as well as by members of the United States Customs Court. Enemy aliens are involved in cases already partly tried,

After the third fire at the plant of the Dexter Sulphite Pulp and Paper Co. The main powerhouse may be seen in the background.

cases which have been tried and are before the courts for decision, and to new cases which have just been placed on court calendars. One of the many questions to be decided is whether the ruling of the Supreme Court applies to enemy aliens as individuals or to partnerships or corporations in which enemy aliens have financial interest.

So-called manila newsprint is being classified for duty as wrapping paper at 25 per cent, and not admitted as printing paper at 1/5 cent per pound and 5 per cent.

Customs officials have decided to allow an issue as to the weight of newsprint from Newfoundland to go to the courts for decision. The paper when weighed by a commercial laboratory under the TAPPI formula was found to be within the maximum 35 pound basis allowed for duty free standard newsprint. The Customs laboratory analysis, however, showed a materially higher weight, and the Court will have to determine which method of testing the paper is correct.

Canadian pulp board has been held dutiable as plain paperboard at 10 per cent, and not at the higher rate for supercalendered board. This is in accordance with domestic opinions secured for the Customs officials by the Import Committee.

Canadian 20-point paperboard has has been classified as plain paperboard at 10 per cent, and not as test liner at 20 per cent, in accordance with opinion from the domestic industry secured by the Import Committee.

Lightweight bleached sulphite has been classified as sulphite wrapping paper at 25 per cent, and not admitted as printing paper. The importers had claimed the material, apparently waxing stock, to be dutiable as printing paper because it was to be printed before waxing.

Protest has been filed by a Los Angeles importer against the classification as dutiable rotogravure paper of Canadian paper containing, according to Government analysis, over 6½ per cent ash.

Two shipments of rice paper at Seattle, classified at 30 per cent as paper not specially provided for are claimed by importers to be dutiable at 20 per cent as non-enumerated manufactured articles. The same claim is made at Los Angeles as to seven shipments of similar material.

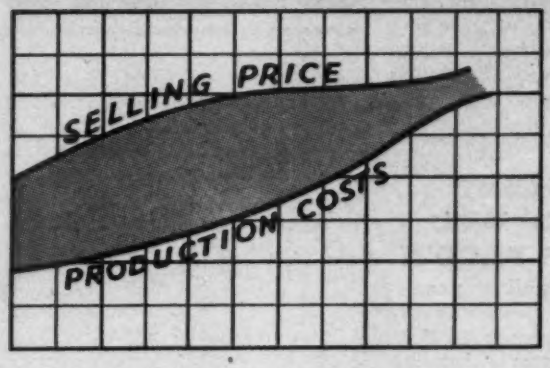
◆

CONSERVATION OF VITAL MATERIALS ASKED BY THE WPB

The paper and pulp industry has been asked by the Pulp and Paper Branch of the WPB to co-operate in the conservation of metals and materials that are vitally important to national defense.

In line with this request, E. W. Tinker, executive secretary of the American Paper and Pulp Association, sent out under date of February 12 a letter to association member mills enclosing a report entitled "Suggested Program for the Conservation of Critical Materials by the Pulp, Paper and Paperboard Industry." This report

There's A PROFIT MARGIN BOTTLE NECK, Too!



1 Steady and sure are rising costs meeting the selling price "ceiling" in paper mills. Higher costs of raw materials . . . increasing labor costs . . . rising taxes . . . all tend to diminish profit margin.

2 Mill men with vision know their problems can be solved . . . know that their production costs can be "pulled down" by replacement of obsolescent equipment. Looking ahead, they know, too, that materials are scarce and paper machinery manufacturers are busy building machines for mill customers, and defense requirements. No, they are not waiting until next year or two to order new equipment at the last moment. For they are planning their future needs today.

3 That is why we suggest that you, likewise, can widen your profit margin between costs and selling price by planning your future equipment needs today. A letter written to us now, stating your future requirements may save you much grief, and money later on, and enable us to help solve your problem in the most effective way.

JONES PRODUCTS

Jones-Bertrams Patent Beater, Standard Beating Engines, Breaker Beaters, Jordans, Fillings, Banded and Bandless Plugs, Beater Rolls, Bars, Bedplates, Washing & Bleaching Engines, Refiners, Beater & Jordan Chests, Agitating Equipment, Screens, Pulpers, Disintegrators, Dusters, Teale Flexible Slices.

Jones

E. D. JONES & SONS COMPANY-PITTSFIELD, MASS.

Builders of Quality Machinery for Paper Mills

was prepared by the OPM Committee for the Conservation of Critical Defense Materials, consisting of S. E. Kay, International Paper Company, R. W. Hovey, Oxford Paper Company, and H. H. Hanson, W. C. Hamilton and Sons, and was submitted to Mr. McKenna on December 31, 1941. In it is included a list of critical materials in the order of their scarcity and a suggested program for their conservation. The letter contained the request that copies of the report be put into the hands of persons in each mill best qualified by ability and position to undertake the supervision of a comprehensive plan of conservation that will accomplish maximum results.

This report is quite lengthy and space does not permit its reproduction. However, copies are available upon request. Ask for National Defense No. 77.

◆

WIS. MILLS GIVE TO THE BADGER BOMBER FUND

The management and employees of the Wisconsin Tissue Mills at Menasha, Wisconsin combined to give a party the evening of February 15 for the benefit of the Badger Bomber Fund, a drive to buy a bomber for the armed forces. A total of $70 was raised.

Along with the money went a letter from the committee in charge which said, in part:

"We feel proud that we are able to do our bit in this great patriotic drive."

Another recent contribution to the Bomber Fund was $28.30 from Electrotype Department employees of the Marathon Paper Mills, Menasha. And at Park Falls, all employees of the Flambeau Paper Mills chipped in to raise $266 for the fund.

◆

SHORTAGE OF PULPWOOD IN CANADA SEEN

Unless Canada can take steps to counteract the effect of labor shortages due to war, the pulp and paper industry will continue to be threatened with a serious shortage of pulpwood within the current year, states Hon. Earl Rowe, president, Great Lakes Paper Company.

Corrective measurements being taken by his company are extending the normal pulpwood cutting season far beyond usual winter months and to use some of the summer months for cutting.

Mr. Rowe estimates that there is a shortage of perhaps 3,000 men in bush work at the present time in his company's section alone. This also affects the Abitibi Power and Paper Company.

◆

ORDNANCE PLANT DRAWN TO WIS. BY PULP PROD'N

Major Wayne O. Hauck, area engineer in charge of powder plant construction, stated February 24 that one of the deciding factors in choosing Wisconsin as the site of the projected $65,000,000 Badger Ordnance Works, . . . was the state's large production of wood pulp.

He said wood pulp can be used as substitute for cotton linters in the manufacture of smokeless powder, and this fact is important because production of cotton is not expected to be sufficient to supply the tremendous requirements of war production.

◆

WILLIAMSON CO. CHANGES NAME

As of February 2, the name of The Williamson Pulp & Paper Div. of Veta Mines, Inc., was changed to Williamson Pulp & Paper Company. This company acquired the property of the Bayless Pulp and Paper Company, Austin, Pennsylvania, last year and is now operating that plant.

The executive personnel of the company is: Harry Williamson, vice president and general manager; Leif Norstrand, sales manager; Joseph H. Beebe, purchasing agent; Carl Engel, resident manager and chief engineer.

◆

WASTEPAPER ITEMS

What might be termed a scrapbook of considerable proportions has been sent out by the Wastepaper Consuming Industries of America. The book, 20x27 inches, is spiral bound and contains 24 double-fold pages on which are reproduced clippings of feature articles and news items that have appeared in many newspapers, magazines and periodicals for business and industrial fields.

This material originated through publicity of the National Waste Paper Conservation Campaign, and the purpose in publishing this unusual compilation is to show the publicity that already has been given to the cause of paper conservation and to aid in carrying on the campaign.

BRIEFS

▶▶▶ THE OLD COATING MILL plant in Kalamazoo (Mich.) formerly owned by the Michigan Paper Company, Plainwell, has been taken over by the Kalamazoo Stove and Furnace Company for use in the manufacture of national defense articles, according to a local report. To what extent the old plant will be used has not been revealed.

◆

▶▶▶ NO CHANGE IN PRICES of its dissolving or paper pulp for the second quarter of this year is the announcement just received from Rayonier, Inc., New York City.

◆

▶▶▶ THE OLD MILL PROPERTY of the International Paper Company at Piercefield, New York, may soon come to life and teem with activity. The company has listed the paper mill, idle for several years, with the Government as available for use in making munitions. All the machinery has been removed, but the buildings are among the largest in the State and there are excellent year-round hydroelectric power facilities. Also there are about 50 houses for employees and a hotel with a capacity for about 50 workers.

◆

▶▶▶ AN ADDITION TO ITS PLANT has just been completed by The Pacific Paperboard Company, successor to the Pacific Straw Paper and Board Company, Longview, Washington. This company also has placed in operation a reconditioned 60-inch board machine with a capacity of 25 tons per day.

◆

▶▶▶ THE SECOND ADDITION to its office building during the past year has been started by the Longview Fibre Company, Longview, Washington. The company has just completed two large warehouses and a cafeteria seating 120 persons.

◆

▶▶▶ IN A COLLECTION OF WASTE PAPER, fifty-six Boy Scouts of Racine, Wisconsin, recently passed the 100,000 pound mark. One-third of the proceeds is kept by the Scouts who collect the paper, and the rest goes into a fund for summer camp equipment and financial aid to Scouts unable to pay their own camp expenses.

★ For the BIGGEST JOB in History—

The needs of our armed forces must be met fast, in unprecedented quantities—and without fail.

The change-over raises a thousand pressing problems. How to adapt present equipment? What materials are needed most, and quickest? How to meet these pressing needs in the face of a growing scarcity of many essentials?

Because of our long experience with government needs and specifications, Calco is in a particularly favorable position to advise you on all matters relating to color work on Government contracts. With many other problems, too, our long experience with the chemistry of color can prove a practical aid.

Your Calco representative, and our Technical Service Department are at your service to help in overcoming your own particular difficulties.

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CALCO CHEMICAL DIVISION
AMERICAN CYANAMID COMPANY

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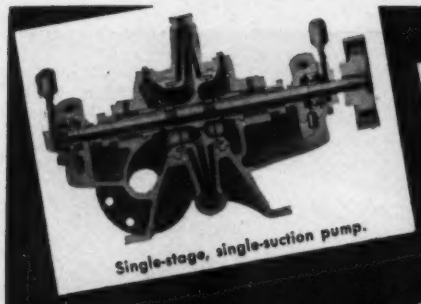
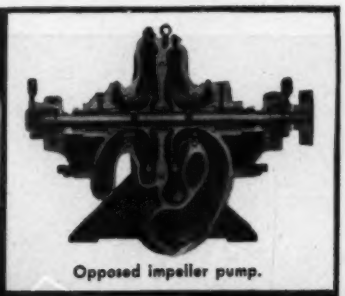
Boston • Chicago • Springfield, Mass. • Philadelphia



Single-stage, single-suction pump.

Clogless pump.



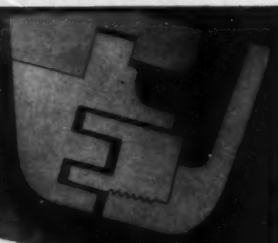
Opposed impeller pump.

40 Year's Progress IN CENTRIFUGAL PUMP DESIGN

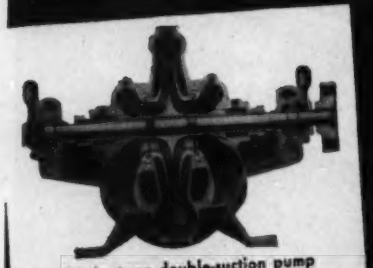
The modern-style, high quality centrifugal pump for motor and turbine speeds, with horizontally split casing, LABYRINTH WEARING RINGS, and removable wearing parts, was introduced by the De Laval Steam Turbine Company in the year 1901.

Advanced methods and equipment for interchangeable manufacture, including jigs, special machine tools and limit gages, were at the same time provided to make possible accurate and high-quality production.

The De Laval Engineering Department has concentrated continuously during 40 years upon the problems of centrifugal pump design and application. This specialization places at the user's command a complete, modern line of highest quality pumps and a vast store of knowledge and unsurpassed expertness in solving pumping problems. State conditions of use and ask for Publication P-3223.



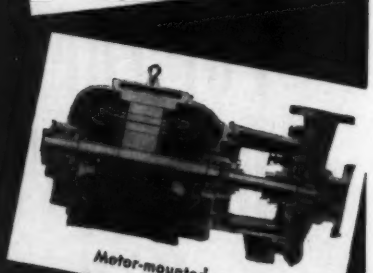
Renewable labyrinth wearing rings.



Single-stage double-suction pump with ball bearings.

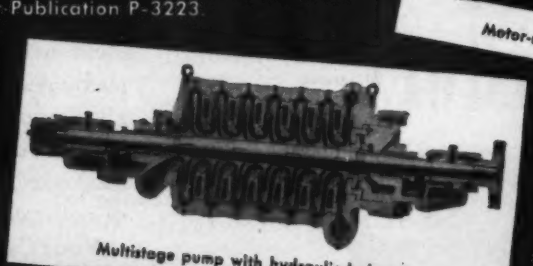
Sleeve-bearing pump opened for inspection.

Sleeve-bearing pump with ball thrust bearing.



Motor-mounted pump.

Mixed-flow pump, for large capacities against low heads.



Multistage pump with hydraulic balancing.

HYDRAULIC INSTITUTE U.S.A. MEMBER

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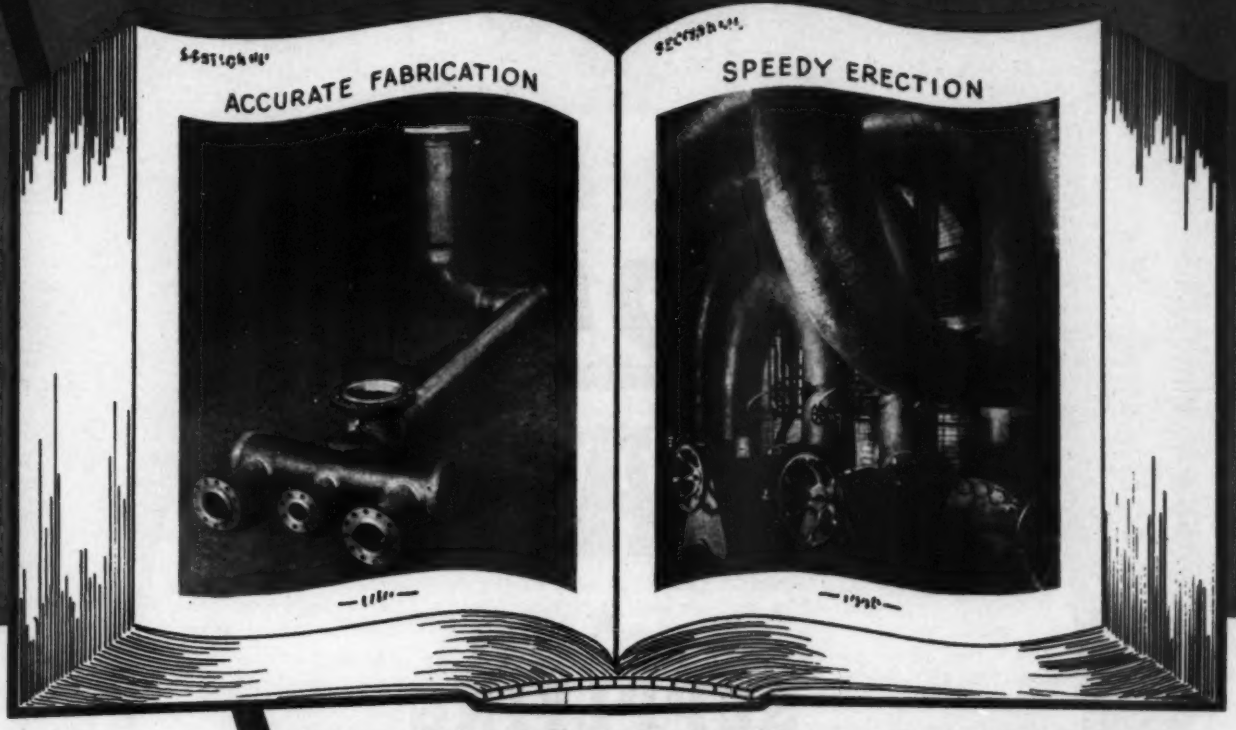
TRENTON, N. J.

MANUFACTURERS OF: TURBINES · STEAM HYDRAULIC PUMPS · CENTRIFUGAL PROPELLER ROTARY DISPLACEMENT · MOTOR MOUNTED · MIXED FLOW · CLOGLESS · SELF PRIMING · CENTRIFUGAL BLOWERS and COMPRESSORS · GEARS · WORM HELICAL and FLEXIBLE COUPLINGS

COMPLETE PIPING SERVICE



PITTSBURGH PIPING'S FABRICATING FACILITIES ARE GEARED TO THE DEMANDS OF PAPER MILL PIPING REQUIREMENTS

FABRICATION AND ERECTION OF COMPLETE PIPING SYSTEMS

Carbon-Moly Piping	Forged Piping Materials
Carbon Steel Piping	Headers
Cast Iron Fittings	Manifolds
Cast Steel Fittings	Pipe Bends
Chrome-Moly Piping	Stainless Steel Piping
Copper Piping	Stainless Steel Tanks and Vats
Corrugated Piping	Valves
Creased Bends	Welded Stainless Steel Tubing
Expansion Bends	Welded Fittings
Flanges	Wrought Iron Piping

PITTSBURGH Piping is thoroughly familiar with problems peculiar to the paper industry, and has the facilities to furnish all types of piping for efficient plant operation. The list at the left, while far from complete, shows the most often used types of piping furnished for power and process lines.

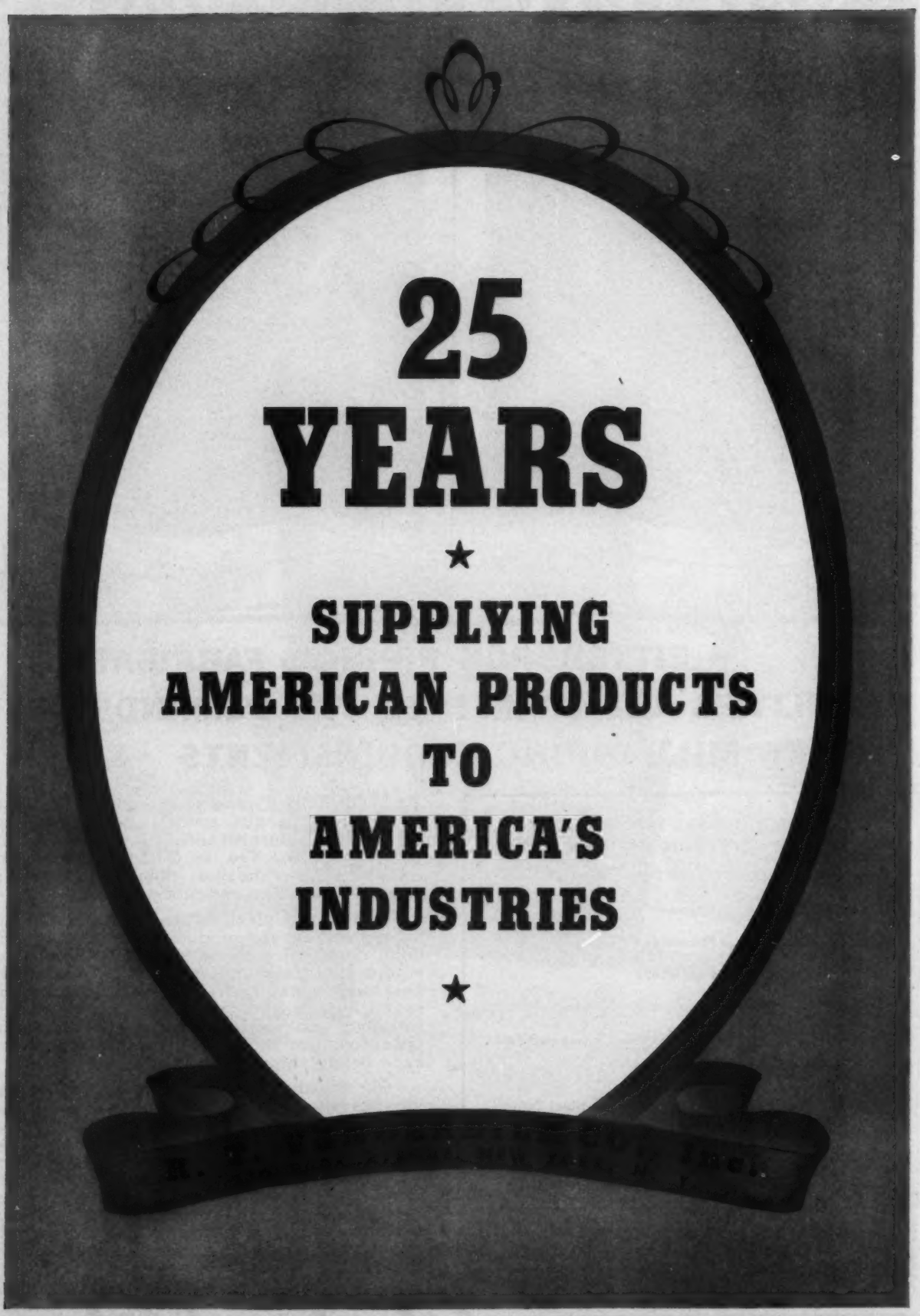
In its 5 acre plant, Pittsburgh Piping has facilities for engineering and producing piping for central stations, industrial and process plants. Here is modern equipment for bending, welding, flanging, machining, heat treating, and hydraulic testing. Not only is time saved by pre-fabricating assemblies as large as shipping and erection limitations permit, but all operations can be checked and inspected for insurance before shipping.

For speedy and efficient erection, Pittsburgh Piping has specially trained field crews who maintain their schedules without interfering with other subcontractors. All assemblies are scheduled through the shop in the required sequence for erection in the field. This integration of fabrication and erection has been developed to a point where, even under present-day conditions, deliveries of completed piping can be made in a minimum of time. If you need a single pipe or a complete system, address your nearest Pittsburgh Piping office.

PITTSBURGH PIPING & EQUIPMENT CO.
10 FORTY-THIRD STREET PITTSBURGH, PA.

Woolworth Bldg., New York · Public Sq. Bldg., Cleveland · Residential Bldg., Indianapolis · 10 High St., Boston · Peoples Gas Bldg., Chicago · Liberty Life Bldg., Charlotte · Union Guardian Bldg., Detroit · 525 Market St., San Francisco

Pittsburgh Piping


25
YEARS
★
SUPPLYING
AMERICAN PRODUCTS
TO
AMERICA'S
INDUSTRIES
★

Editorial

Paper Industry Geared to Meet War Demands

▶▶▶ THE OPERATING RATIO of the American pulp and paper mills for January, 1942, was 104 per cent of capacity. The ratio for paperboard mills was 102 per cent. These are to be contrasted with 85.6 per cent for the paper mills and 75 per cent for the paperboard mills for January, 1941. This reflects the continued upturn in demand for paper products due to the ever increasing industrial activity in this country. The paper industry is assured of top capacity operation for 1942. The production of armaments is the one single spur to continued increase in production.

A year ago for the month of January, the Government's expenditures for armament were $569,000,000; for January, 1942, they were $2,101,000,000—an almost four-time increase in monthly spending. The total expenditures for the year, 1941, were $12,528,000,000. On the basis of this year's expenditures in January, they are running at an indicated total for the year of twenty-five billion dollars. However, with the speed-up tempo, which is now apparent, they are estimated to reach thirty billion dollars. If they do reach that total (and they ought to make it and more, if we are to win the war) the demand for paper products by the Government will total 4,500,000 tons this year as against 1,875,000 tons last year.

The Government's demands for paper this year will thus be some two and one-half times greater than for 1941. Our consumptive supplies in all grades, we estimate, will be in round numbers about 23,600,000, providing there is no particular shutdown of vital production due to lack of critical supplies in production equipment necessary to keep mills running. With 2,600,000 tons additional paper for consumption this year, every Government demand for paper products can be met, and all other customers of the mills will get as much paper as they received in 1941. However, the 4,500,000 tons of paper products to fill Government demands, will in any event be furnished and the balance will be available for general use.

It is going to be an interesting situation. There are uncertainties in production factors which will test the resources of the various divisions to meet. Already, we know that many shifts in grades must take place and are now in process. Sulphite and groundwood wrappings, for instance, will have to be substituted for kraft wrappings.

Last year, out of a total of 1,600,000 tons of kraft papers shipped into the market, only 437,900 tons of both M. F. and M. G. papers were for wrapping. The total production of all grades of wrappings were 2,860,000 tons.

A more intensive drive to collect wastepaper and a sensible liberalizing of collecting costs upward would bring into the converting mills a larger tonnage of raw material for paper conversion.

On the whole, we are of the opinion, after viewing all the factors in the paper production equation, that the paper industry will close 1942 with another record production to its credit.

The paper industry is meeting the challenge for all-out production and doing its utmost to win the war.

Keep 'em Rolling

▶▶▶ TAKING THINGS FOR GRANTED is a trait common to most of us—so common, in fact, that seldom do we give thought to the things which make the wheels go 'round. It is only when a dire emergency arises, such as the one which began with Pearl Harbor and which can end only when free men once more can live upon this earth in peace, that our thinking becomes of that down to earth variety. Probably most of us have done more serious thinking since December 7, 1941, than in any similar period of our lives.

One of the things which industry, including that of pulp and paper, has taken for granted for many years is transportation, particularly railroad transportation.

It seems that cars in any desired quantity have most always been available for both incoming and outgoing shipments, and seldom has pressure been brought to bear by the railroads upon mills to unload or load cars quickly. Perhaps it was to the economic advantage of the railroads to function in this way because demurrage brought revenue to them.

Today, the situation is different. With greatly increased war production, the facilities of our railroads are being taxed to the limit. Therefore, the need of shippers coming to the aid of carriers is apparent. It simply is imperative to keep all cars a'rolling and to do it requires the utmost in co-operation on the part of every shipper, large and small.

One traffic authority advises that there are about 1,650,000 cars currently available, and that the average turn-around last year was 12.2 days.

It is easy to understand if that turn-around time can be lessened one day, or approximately eight per cent, it will be the same as adding 132,000 cars to the present rolling stock.

Using the average lading of a car loaded last year, the traffic authority also relates that a one ton heavier loading would have the effect of 80,000 more cars. Another 25,000 to 30,000 cars a year would be available, he claims, if all debris is removed from cars at times of unloading.

On the basis of such facts, every man in the pulp and paper industry, who in any way is connected with shipping, is faced with a patriotic challenge—to keep the cars rolling by unloading them promptly, by avoiding delays in switching, by eliminating circuitous routing (if such routing causes delay), by placing orders for materials in full carload quantities whenever possible, by removing all debris from cars when empty, and by loading all cars to maximum capacity.

Current Thought

"THIS TIME IT'S GOING TO BE DIFFERENT"

WILLIAM SIBLEY

▶▶▶ YEARS AGO Ed Wynn used to be the featured star in the Texaco radio program. Each week he would laughingly assure Graham McNamee that "This time it's going to be different." Today, America is engaged in its seventh war. The Revolutionary War, the War of 1812, the Mexican War in 1847, the Civil War in 1861, the Spanish War in 1898, and the World War of 1917 all have passed into the limbo of history. Now we are engaged in our seventh war and, believe me, "it's going to be different."

In the first place, this is a planetary war. Never before has the entire globe been on fire. In the second place, the high degree of mechanization to which war effort has been brought makes this a war of metals. This war is requiring nearly fourteen times as much metal per enlisted man as did the World War of 1917.

Just where we are going to get all the metal that is being demanded by those in authority isn't yet clear. And while it was true (and to a certain extent still is) that the combined ownership, or commercial control of England and the United States represents approximately 75 per cent of all the metal in the world, there is little to be gained by underestimating the metals available to the Axis powers. Germany, in her own right, has tremendous metal resources, not to speak of those captured in Sweden and Norway, France and other parts of Europe.

Yes, this is a war of metals. We will realize this more as time goes on. That's another way in which this war "is going to be different." In the first World War it was "business as usual." Mr. Nelson, named czar of war production, says in effect, "to hell with that." Business men have been living with priorities for a year now, but it was three years before the first priorities were issued during the first World War. In the "good old days" we were actively in the war for nearly a year before President Wilson named Mr. Baruch head of the War Industries Board. It took less than a month, this time, to get Donald M. Nelson appointed.

During the first World War it wasn't until two months before the Armistice (September, 1918) that Mr. Baruch explained his ban on all non-essential building by saying:

"It is not only the policy but the clear and simple duty of the War Industries Board to see that the war program of this country is met and this program must be met now when the need is upon us. This duty must be fulfilled even if its fulfillment entails industrial loss in this country, as it does human loss abroad."

This time, we hadn't been a belligerent two months before automobile production had been halted and stocks frozen. Tires and sugar have been rationed for consumers. Civilian use of rubber is cut 20 to 80 per cent, and for some some products, banned entirely. Yes, this war is "going to be different."

During the first World War the nation endured some meatless days, sugarless days, and ate a lot of margarine instead of butter. But the purchase of Liberty Bonds, Victory Bonds, Defense Stamps, and the like were largely voluntary, and taken all in all, the populace didn't feel the pinch of war to any pronounced extent. Now, there is sharp likelihood of compulsory savings being imposed upon all wage earners and we will be told what percentage to assign to the purchase of Defense bonds or stamps.

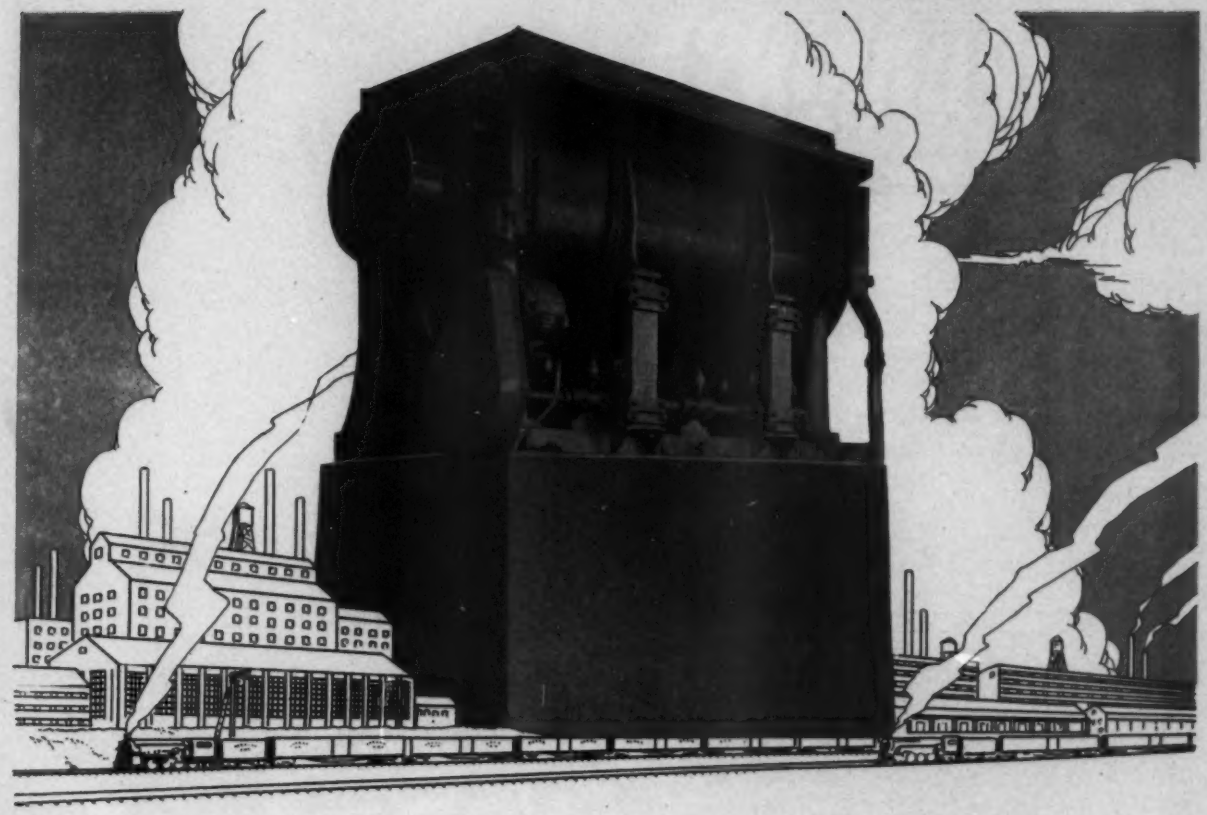
During the last war we scarcely gave paper a moment's thought. This time the war is demanding one pound of paper for every two dollars of war expenditure. Ten billion dollars spent —five billion pounds of paper used. Seems incredible, but there are a lot of things about this war which are unbelievable but true. That demand for paper creates a distressing shortage for some manufacturers who, even though they have ample raw materials (such as in the food field) find themselves up against it for packaging materials.

Many other companies which might continue operating are faced with seemingly insurmountable problems such as those created by the ban on cars or tires. Such instances will lead inevitably to the closing down of many businesses (for the duration) in all three classifications of manufacturing, distribution and retailing. There were commercial casualties during the first World War, but there will be far more this time, because, no fooling, "this time it's going to be different."

When the necessary bureaus and boards were set up for the proper functioning of the first World War, Congress very wisely stipulated, in laws passed, that such war boards or bureaus, should cease to exist six months after the war was over. This time, unfortunately perhaps, there are no such limiting restrictions on war boards or bureaus. This might mean that not only is this war different, but that the peace-time economy to follow the war is also "going to be different."

From the foregoing, don't think I am trying to be lugubrious, or that I have a headache from a night before. I am merely trying to tell you a few of the many ways in which this war is "going to be different." For a little lighter note, here is a quotation from W. J. Enright in a recent issue of the *New York Times*:

"The chief entry on the credit side of the war is the industrial ingenuity and skill which is developing to the highest level in the history of the country. New and substitute materials are flowing out of laboratories at an unprecedented rate; large and small companies, spurred by war necessities, are acquiring a precision and skill never before evident. At the war's end, an abundance of all materials, natural and synthetic, at low prices, should develop, and if the economic tailspin that has followed all previous wars can be averted, business in this country can look forward to a degree of peace-time activity never before achieved."



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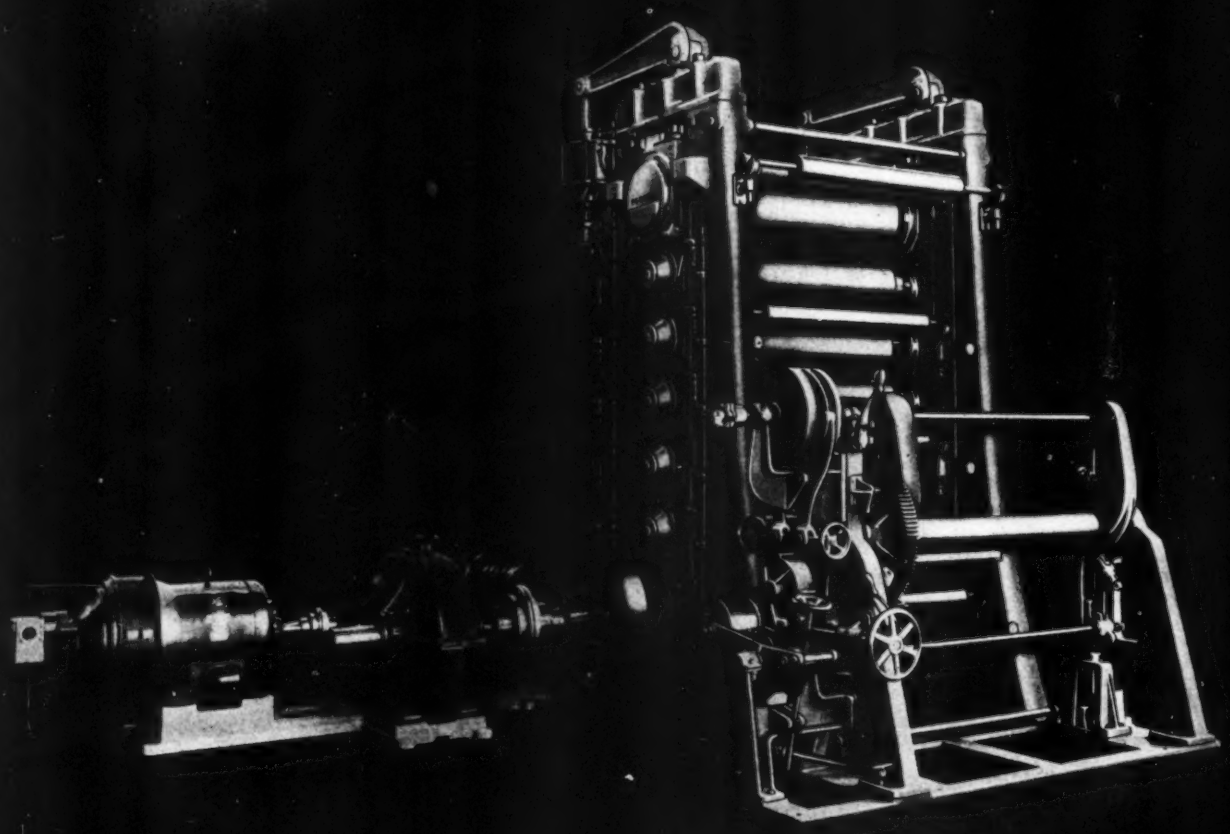

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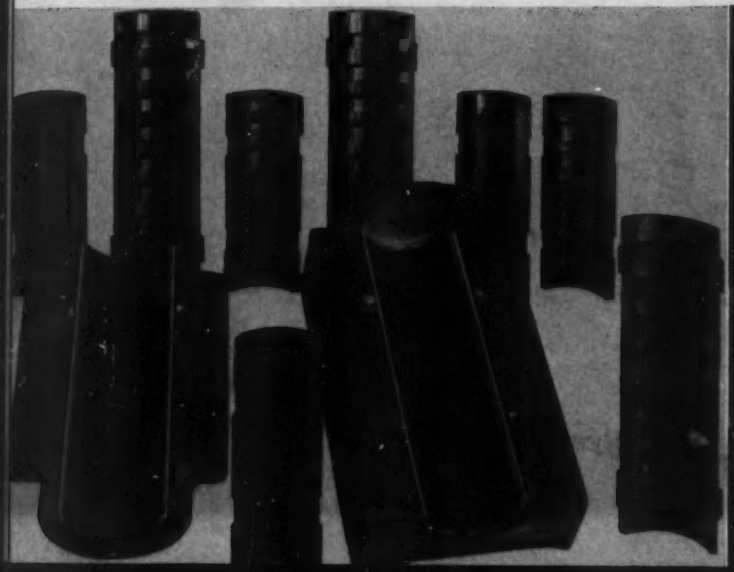
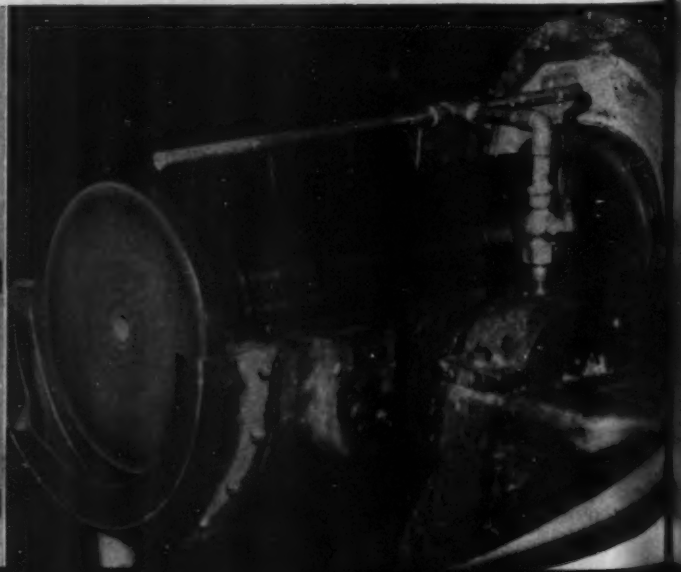
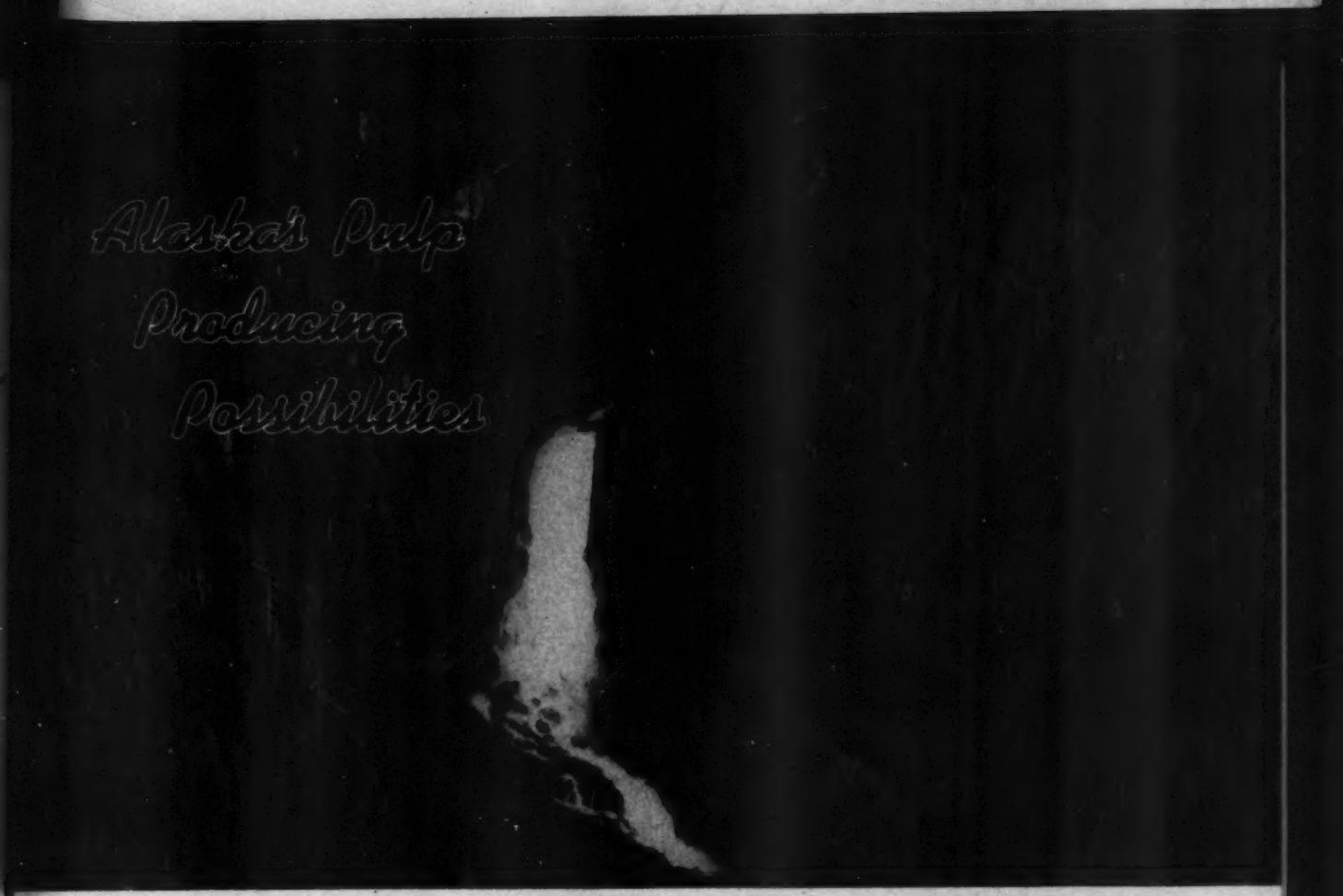




Alaska's Pulp Producing Possibilities



LOUISE C. MANN

▸▸▸ "THERE IS A SHORTAGE OF PAPER in this country. One napkin to a customer, please." So read a sign recently displayed in a popular cafeteria. Already the country is beginning to suffer from the rationing of the necessities of life!

The reasons for this shortage of paper are well known. In the first place, supplies from the Scandinavian countries have been cut off by the war, and in the second place, Canada already is producing pulp beyond the limits of her capacity in order to provide boxes for army supplies and secure foreign exchange to purchase munitions from the United States.

The OPM estimates that 26,000,000 tons of paper will be needed in 1942, while the American Paper and Pulp Association claims that 22,000,000 tons will be available. The estimate for 1941 consumption is 20,000,000 tons. At least 30 per cent of this paper output is going into defense, and this percentage will probably increase as the nation goes more and more on a total war footing. Not only will wood pulp be needed for paper, but for the growing rayon industry which will have to supply more rayon to take the place of Japanese silk.

Therefore, the time would appear to be ripe to examine the possibilities of producing more pulp in the continental United States; and of these opportunities, that in Alaska appears to be one of the most promising, which is proved by the fact that three enterprises were in the process of negotiation when the depression intervened.

History

At the request of these three interested parties, the U. S. Forest Service in 1927 advertised for sale two Alaska pulp-timber units, each unit aggregating 5 billion board feet. One of these units is located in the vicinity of Juneau and the other near Ketchikan.

The only bid received on the Juneau unit was submitted by George T. Cameron, publisher of the *San Francisco Chronicle*, and Harry Chandler, publisher of the *Los Angeles Times*, who proposed to establish a mill chiefly to supply their own newsprint requirements. Two bids were received on the Ketchikan unit, the higher being made by the Crown Zellerbach Corporation and the other by the International Paper Company.

The successful bidders were given three years to cruise and map the timber areas and to do the necessary engineering work on the power sites. Although in both cases time extensions on the conditional awards were granted, it finally became evident that the depression was too much for the new enterprises, and they were abandoned.

What advantages does Alaska possess which are lacking in localities nearer this country's industrial centers? Timber, waterpower, and transportation facilities combine to make the Territory ideally suited for the production of pulp. The only factor which is lacking is a supply of cheap labor; but if present unemployment continues, one might assume that this handicap could be overcome.

These various factors have been analyzed in detail by B. Frank Heintzleman, Regional Forester of Alaska, in a pamphlet published May, 1937, entitled *Pulp Timber Resources of Southeastern Alaska*, and in a report on *Regional Planning by the Alaska Resources Committee* published in December of the same year. Since the war has had no effect on the climate of Alaska or on the species of trees growing there, these two reports will be quoted as authorities on timber and waterpower.

Timber

Most of the standing timber in southeastern Alaska is included in the Tongass National Forest of 16,546,000 acres and that in the Prince William Sound area is in the Chugach National Forest of 4,800,000 acres, so that together these two national forests comprise most of the land on the southern coast of the Territory. It has been estimated that they contain 84

billion board feet of lumber. Only 1½ billion board feet of the lumber is outside of the national forests, and some of that is reserved for the Indians. The U. S. Government, therefore, controls not only all of the best forests in the Territory, but all of the available waterpower, which important fact will be discussed later.

The Tongass National Forest contains both the larger volume and higher quality of timber, the better waterpower, and the shorter haul to markets. Of its 78½ billion board feet, 74 per cent is western hemlock and 20 per cent Sitka spruce, the remaining 6 per cent being divided between western red cedar and Alaska cedar.

Half the commercial timber of this region is composed of a typical climax forest which contains both overmature trees and young growth, consisting of 75 per cent hemlock and 25 per cent spruce. The remaining forest is divided between mature timber stands, and young growth which contains a larger percentage of spruce than the virgin forest. Both of these latter woods are excellent material for pulp.

The high value of western hemlock in pulp and paper manufacture has been established fully by the mills of Oregon, Washington, and British Columbia, where it is the foundation of the extensive bleached and unbleached sulphite pulp industry. A large proportion of the bleached output goes into rayon and Cellophane, while the unbleached is principally made and used in the newsprint mills.

The Sitka spruce growing in clear stands is too valuable for other purposes to be used as pulp, but that growing in forests mixed with hemlock appears too sparsely to attract sawmill development. The high-grade spruce lumber is in great demand at the present time for the construction of training planes, for which purpose it is superior to metal. Sitka spruce is also a good pulping wood, comparing favorably with white spruce.

The aim of the forester will be to reproduce both species, with emphasis on the production of the more valuable spruce to the point, now unknown, where its quality begins to suffer.

Estimating the commercial stand of virgin timber in southeastern Alaska at 80 billion board feet, and allowing 80 years as the rotation period during which this virgin timber may be removed entirely under sustained-yield forest management, the Forest Service deduces that approximately 1,500,000 cords of wood of 600 board feet each can be taken from the forest each year in this period. This output is sufficient to produce more than 1,000,000 tons of newsprint a year. As the new crop of timber (in which cutting will begin after 80 years) will have at least twice the volume per acre of virgin stand, the Forest Service thinks that a plan of forest management based on a sustained yield of 1,500,000 cords of pulpwood producing 1,000,000 tons of paper per year forever, should be very conservative.

The government policy in effect for the handling of the Alaskan national forests, which is substantially the same as that followed by the timbered Provinces of Canada, makes it possible to get a long-term supply of timber definitely tied to the mill, which usually represents an investment of from $15,000,000 to $25,000,000. It prevents that overdevelopment and subsequent collapse through timber exhaustion that has characterized timber industries in many sections of the United States.

Waterpower

The excessively heavy rainfall of southeastern Alaska is not only advantageous from the standpoint of reducing the fire hazard, but it insures an adequate supply of waterpower. Mountains and hanging lakes also add to the potential hydroelectric energy, although the water resources cannot be pooled in large concentrations because of the many fjords. To date, a potential waterpower supply of 800,000 hp. has been surveyed.

The largest single power site so far investigated has a year-long capacity of 32,000 hp., but in many places power from several sites can be concentrated economically at one manufacturing point. Power sites have been selected to yield 50,000 hp. near Juneau, 54,000 hp. near Wrangell, and 60,000 hp. near Ketchikan.

The outstanding characteristics of the waterpower of this region are as follows: high-head developments, short conduits, small drainage basins with heavy run-off, good water-storage facilities, accessibility of the projects to navigable waters, and very short power-transmission distances. The typical waterpower site has a high hanging lake located at an elevation of over 500 feet, a short distance inland from tidewater, which can be made to serve as a storage reservoir by the use of a dam or a tunnel, or both. Conduits to connect the lakes with power houses at tidewater will range from ¼ mile to 3 miles in length, and in most cases will be less than 1½ miles long.

Because of the heavy precipitation, the run-off is very high. The normal period of low stream flow occurs in winter, when the rain turns to snow on the high watersheds, so that extensive water storage for winter use is necessary. Many of the power streams considered suitable are fed by perpetual snow fields, which sustain the water flow materially during any prolonged dry periods in the summer.

Government Control

The Federal Power Commission has jurisdiction over all waterpower development in the United States in which public lands or navigable waters are involved. Power sites, therefore, cannot be purchased by private companies, but must be rented for a nominal fee under a form of license for not more than fifty years, which may be renewed under certain conditions. After bona fide construction has begun, a license can be revoked only by a decree of a Federal Court.

Owing to the close relationship in paper making projects between waterpower development and the use of timber resources, the Federal Power Commission and the Forest Service coordinate their actions on applications for such projects in southeastern Alaska, and award both to one concern. It is estimated that there are sufficient resources in Alaska to take care of seven large plants.

The fact that payment for the timber placed under contract need be made only as cutting proceeds eliminates the necessity for the extremely heavy initial investment in standing timber that would be required of the manufacturer at the time the plant is established if the timber supply of the region were privately owned, or if the Government sold the timber outright at the start of operations. As stated before, this is the system in general use in Canada.

Transportation

One of the principal advantages of Alaska for the logging industry is the fact that most of the forests are on or near tidewater, because of the long coast line and numerous islands and protected sea channels. A large percentage of the timber can be logged directly into tidewater by the use of donkey engines, while the longer valleys, which would require railroads or trucks, need not be tapped in the beginning.

Furthermore, these sea channels run all the way to Seattle, under the title of the "Inside Passage," thus protecting shipping not only from stormy weather but from Japanese submarines. From Ketchikan, the southernmost port in Alaska, it is 660 miles to Seattle, and only 90 miles to Prince Rupert, B. C., the Pacific terminus of the Canadian National Railroad. Even a railroad-car ferry or a barge service could be operated to transport pulp and paper from Ketchikan to Prince Rupert.

For the longer route from Juneau

to Seattle, there is as yet no shortage of ships on account of the war. The northbound shipping space is congested by the heavy shipments of defense materials to Alaska, but the southbound space is still available except during the short canning season of about six weeks in the summer. The other large export product of Alaska is gold, which does not occupy much space on the ships.

There is also much talk of building an international highway from Seattle through Canada to Fairbanks as an extension of the Pan American highway. This road would be kept open all winter as a defense measure, so that the interior of Alaska could not be cut off by war damage to the other transportation routes, because Alaska is completely dependent upon the "outside" for food. If this highway should be built, a 100-mile connection would be made with Juneau. While trucking over this road would be too expensive for the paper industry in normal times, it would insure communication with the outside world during war emergencies.

On the other hand, when Mr. Heintzleman made his estimates, he was depending on cheap ocean freight directly from Alaska through the Panama Canal to Eastern ports, which not only can be counted out entirely for the duration of the war, but for several years thereafter as long as the shortage of ships continues. The Regional Forester also mentioned markets in the Far East, which no longer exist.

Labor

Another factor which must be taken into consideration in developing any new enterprise in Alaska is the fact that there is no large supply of cheap labor. All labor, especially skilled, must be imported, and prevailing wage rates are higher in Alaska than they are outside. On the other hand, since the unemployment problem has not yet been solved in the United States, the shortage of labor in Alaska is not an insuperable obstacle. As long as there is depression unemployment, technological unemployment, and priorities unemployment, there will be plenty of men of an adventurous turn of mind ready to go to Alaska when jobs are available. Many of them were seen on their way to work on defense bases who had turned down similar positions in Seattle because Alaska sounded more interesting. They felt that a new enterprise in a new country offered more opportunity than an already well-established industry elsewhere.

Another misapprehension about Alaska that must be cleared is that

Mixed spruce and hemlock stand at Polk Inlet, Tongass National Forest, Alaska.

southeastern Alaska is not the Arctic. The mean winter temperature ranges from 29½ to 35 Fahr., and in summer is from 50 to 55 deg. at sea level. Thus the summer weather is invigorating, while the winter is not such s to impede work. While the logging season is usually considered as covering eight months (April 1 to December 1), winter logging is practicable in many localities. The main seaways are free of ice all the year. No great amount of snow remains on the ground at sea level. Thus the climate in this section is not bad enough to discourage permanent settlement if economic opportunity should be available.

It is true that in southeastern Alaska it rains most of the time, especially in Ketchikan, where the annual precipitation is 159 inches, one of the heaviest in the world. Juneau rainfall is only half as great, averaging 81 inches. People who live in this region suffer from lack of sunshine, in spite of the fact that in the summer the sun shines almost all night if it shines at all. They are further handicapped by the scarcity and high prices of fresh fruits and vegetables.

War Obstacles

The world situation at present will, of course, postpone the building of a peace time industry in Alaska, the principal difficulty being the shortage of metals for new machinery. Priorities already have made it hard to obtain replacements of paper-making machinery at home. As the war progresses, a shortage of skilled labor also may develop.

While there is no shortage of capital in the United States at present, the heavy excess profit taxes discourage risky investment. Certainly no capitalist would venture his funds on a new enterprise in Alaska for the purpose of obtaining a meager 6 per cent. In Alaska even sound first mortgages and prime commercial paper yield 8 per cent. On the other hand, it is always possible that corporation taxes may not be too greatly increased, if it is found that they impede production, as England has already discovered to her sorrow.

Another obstacle to the industrial development of Alaska is the international policy of our Government. The case of antimony is a clear example. It took years to develop an antimony mine at Stampede Creek; when it was ready to produce and there was a good market because antimony became a strategic metal, the Government lent $50,000,000 to China which is being paid back in the form of antimony and other Chinese products. Since private capital in Alaska cannot compete with subsidized Chinese industry, the antimony mine at Stampede Creek was forced to close down.

In other cases our Government has found it more expedient to cultivate hemisphere defense at the expense of private business in the United States, examples being those of Argentine beef and American oil companies in Mexico. This statement of fact is not intended as a criticism of our governmental policy, but simply to explain why Alaska is undeveloped today.

At the present time there is every reason why this country should buy its newsprint from Canada. It can be obtained more cheaply, Canada is a friendly country, and needs foreign ex-

(Concluded on page 1205)

A Review of PAPER CONTROLS of Two World Wars

A. N. WECKSLER

▶▶▶ AS WAR CONTROLS increasingly affect the operations of the pulp and paper industry, surveys of the British experience and the effects of World War I on the paper trade become increasingly important as indices of what the future may hold.

Generally, the position of Britain is not parallel to that of the United States, in that the Isles have no large reserve of materials upon which they may draw.

Both the British and the United States paper trade relied on European sources for pulp, but the salient difference between British and United States dependency upon such imports is that Britain acquired the bulk of its pulp supply from Europe, while the United States in large part bolstered domestic supplies with imports.

As a result, Britain has been hard pressed and will have to receive allocations of pulp from this country. It is estimated that approximately 112,000 tons of sulphate and 97,000 tons of sulphite pulps will be shipped to Britain from this country during 1942.

Many British mills have been forced to shut down, with the over-all curtailment in the activity of the industry approximately 75 per cent.

The only production which has been maintained at a fairly high figure is that of paperboard required for packaging. There still is production of wrapping papers and book papers, at a greatly reduced rate.

As is the case in this country, chlorine has become a major problem in Britain, and while some chlorine must be made available for the production of necessary chart and blueprint papers, no other production can use the bleaching agent.

The problem in this country is not as severe as is the case in Britain, but shortages of chlorine are becoming increasingly pronounced, and while domestic sources of both sulphate and sulphite pulps are fairly adequate, the tremendous over-all requirements for wrapping papers and boxboard constitute a heavy load on the raw material sources.

War in the Far East has had an immediate effect on the pulp supply. Restrictions on the use of burlap for wrapping and shipping place a constant drain on heavy wrapping krafts, while the explosives industry requires diversion of nitrating pulps from uses in papermaking.

While Britain has little access to large supplies of waste papers for the manufacture of boxboard, the United States problem is largely one of conservation and such control over waste paper markets as will not increase boxboard production costs beyond reasonable levels.

Demands for pulp and paper products, especially in the container and wrapping field, will tend to increase, and requirements for construction papers will constitute a large tonnage. The high rate of heavy industry activity will continue to create large demands for all types of paper.

However, as the war effort continues, serious problems will develop parallel to those of World War I, when the paper and paper products industries were placed under restrictive regulations.

A study of the industry during the first World War, prepared by the Bureau of Labor Statistics of the United States Department of Labor, reveals that a series of restrictive controls were imposed on the industry, and that these controls were similar to the measures which the paper trade is now facing.

The initial step taken in World War I was an economy drive. In January, 1918, in order to save coal for war industries, the United States Fuel Administration ordered paperboard and other board manufacturers to close down two days each week. Later in January of 1918, the Fuel Administration closed all manufacturing industries east of the Mississippi River for five consecutive days and four additional Mondays. This order affected the whole paper industry, except for newspapers and periodicals. In March, 1918, because the coal supply was more plentiful and because essential industry could substitute paperboard containers for some wooden crates and tin cans, the two-day weekly closing for paperboard manufacturers was lifted.

During the present war effort, there already have been indications of some fuel shortages, particularly in the regions where there was great dependence upon hydroelectric power, and where there was limited rainfall. While a real, over-all power shortage appears to be imminent when the war industries reach a peak in production, the relatively greater importance that boxboard plays in the present war effort would make a shutting down of board mills unlikely.

The armed forces and lend-lease have become in large measure dependent upon fiber containers rather than wood. Uses for paperboard are many and varied, and as is the case in Britain, reclaimed paperboard used for lend-lease shipments provides mills on the Isles with an appreciable tonnage of waste papers which fact is of vital importance in filling Britain's needs.

The Paper and Pulp Section of the War Industries Board of World War I was organized in June, 1918, and at that time, a more inclusive economy drive was launched. Methods were sought to eliminate excessive use of sample papers and similar wasteful practices.

Finally, early in August, 1918, paper mills were given a Class 4 preference rating for coal, provided their customers pledged to practice the conservation proposals of the Paper and Pulp Section.

Later in 1918, several new orders were issued further restricting usage of paper. The full necessity for conserving paper, according to the conclusions of the Department of Labor report, was not generally recognized until October, 1918, when military requirements led to a 50 per cent reduction in the volume of chlorine allotted to the papermaking industry. Further chlorine use restrictions for 1919 were in prospect, but the ending of hostilities eliminated the need for such restrictions.

▶▶▶ During the current war effort, restrictions against the use of chlorine came much more quickly, due to the large scale requirements of the armed forces. At the same time, any pinch in fuel supply will not come until the latter part of this year when major

new plant units will create additional drains on the power supply.

One of the first recommendations of the Pulp and Paper Section of the War Industries Board during World War I was an appeal to newspapers that stated:

"On account of the shortage of materials the question of the supply of paper is becoming acute and the use of paper must be economized to the greatest possible extent. It is necessary that all newspapers which publish a daily and weekly edition put the following economies into effect July 15, 1918 . . ."

The economies suggested were:

1) Discontinue the acceptance of the return of unsold copies.

2) Discontinue the use of all samples or free promotion copies.

3) Discontinue giving copies to anybody, except for office-working copies or where required by statute law in the case of official advertising.

4) Discontinue giving free copies to advertisers, except not more than one copy for checking purposes.

5) Discontinue the arbitrary forcing of copies on news dealers (i.e., compelling them to buy more copies than they can legitimately sell in order to hold certain territory).

6) Discontinue the buying back of papers at either wholesale or retail selling price from dealers or agents in order to secure preferential representation.

7) Discontinue the payment of salaries or commission to agents, dealers, or newsboys for the purpose of securing the equivalent of return privileges.

8) Discontinue all free exchanges.

▶▶▶ Similar approaches were made to other users of paper between July and August, 1918.

On July 23, blank books producers were asked to standardize the weight of paper and discontinue fancy paper. Two days later wallpaper manufacturers were asked to discontinue overtime operations and run a minimum number of printing machines. On August 1, producers of book paper and other papers were asked to standardize color, weight and size of papers offered.

The research report of the Department of Labor states that compliance with these requests was not altogether satisfactory, and it became necessary to warn manufacturers against "stocking up" on paper, chipboard, and other materials.

Loopholes in the paper conservation program were closed on April 10, 1918, when the Priorities Board of the War Industries Board issued Preference List No. 1 which included "plants printing and publishing exclusively newspapers and periodicals," permitted such plants priorities in delivery of coal supplies and raw materials.

Paper mills were not given priority preference, and they began to complain of the difficulties in obtaining supplies. On May 28, the Priorities Board announced that newsprint mills would be given priorities on fuel if they needed it, and if priority was warranted in individual cases. Such priorities were extended individually for each mill, and not to the industry as a unit. Later, the Class 4 preference rating for coal was given to all paper mills.

During the current war era, it is generally believed that the problem is more spotted. Specifically, lack of chlorine will directly affect the degree of brightness of all papers for which bleached fiber is used. In the case of book papers, the dislocations will be largely parallel to the dislocations in the civilian economy.

Curtailment of consumer goods products will reduce advertising, and in turn affect the publication of periodicals. The problem of inks will doubtless call for extensive changes in printing and publishing practices, but inks will not decide the course of the paper industry during the present war emergency.

The requirements of the armed forces for nitrating pulps essentially will have a direct effect on the total pool of pulp available for book papers, but the tonnage of pulps which may be diverted to the armed forces probably will not constitute a very large percentage of the total pulp production.

Deciding factors will be restrictions on pulp and paper products imposed by transportation problems, woods labor shortage, power problems, and the general problems of civilian industry dislocation.

During the first world war, many rigid controls were imposed on paper use, such as the controversial regulation issued on August 5, ordering newspapers to reduce the use of paper in week-day editions by 15 per cent, and in Sunday editions by 20 per cent. New publications were also prohibited.

This regulation was followed by others, which became increasingly stringent as the war progressed. Even publishers of medical books, who were able to delay the effects of the regulation on their publications on the ground that their publications were essential to the welfare of the nation and to the war program, were finally brought into the conservation picture.

By far the most generally applied regulation during World War I affecting paper was in the field of curtailment of the tonnage of paper used by the various industries for which paper was a basic raw material. Standardization and simplification were proposed fewer times, primarily because of the considerable amount of detail work involved in such restrictions.

In addition to the order affecting newspapers, other orders, listed in their chronological sequence, giving the name of the industry, the type of regulation, and the provisions of the regulation, were as follows:

Paper Use Regulations World War I

August (1918)

Textbook (curtailment)—Production reduced 50 per cent.

Periodicals (curtailment and economy)—Reduce weight and size of periodical, and eliminate wasteful practices.

Trade Books, Toy Books, Reprints, etc. (curtailment and standardization)—New titles reduced 25 per cent, and size and weight of paper limited.

September

Canvas and Rubber Footwear (curtailment)—Use of cartons and tissue paper for packing prohibited.

Country Editions and "Mail Order Publications" (curtailment)—Tonnage of paper reduced 15 per cent from first six months of 1918.

Wrapping and Book Papers (standardization and simplification)—Size, weight, and color of paper limited.

Drug Box and Drug Label (standardization and simplification)—Size of box and size, weight, and type of paper limited.

Cardboard and Paper Box (economy and curtailment)—Careful use of paperboard, and reduction in the use of paper by 50 per cent.

Calendars (action deferred due to preparations under way for 1920 calendars).

Retail Stores (economy)—Unnecessary wrapping to be discontinued and reduction in the use of paper.

October

Farm Journals (economy and curtailment)—Use of paper to be reduced 15 per cent, and wasteful circulation practices eliminated.

Paper Mills (curtailment)—Eliminate the production of laundry boards except as unavoidable side runs.

(Concluded on page 1208)

Refractories for Lime Recovery Kilns

C. A. BRASHARES
Harbison-Walker Refractories Company

▸▸▸ EACH YEAR THE RECOVERY OF LIME from lime sludge is becoming of greater importance to operators of paper mills producing soda and sulphate pulp. The major portion of the development of the various recovery processes has occurred during the last twenty years. The principal factors leading to the wide use of lime recovery systems are considerations of economy, and the desirability of having means for conveniently disposing of the lime sludge produced in the preparation of cooking liquor.

With paper mills located close to the lime-producing centers on streams where the sludge could be dumped without objectionable results, the recovery of lime from the sludge has been of relatively minor importance. However, with the rapid expansion of the paper industry, during recent years, accompanied by the construction of plants relatively distant from lime-producing areas, and also with the increasing difficulties experienced in dumping sludges in streams, recovery of the lime has become a very important matter.

In the recovery of lime from lime sludge, the use of rotary kilns is by far the most general practice; however, vertical multiple hearth furnaces have been used at a number of plants, and the possibility of employing sintering machines has been considered.

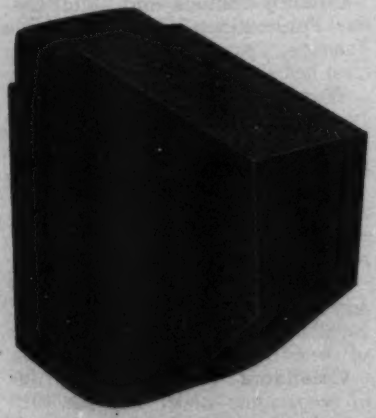


Fig. 1—Typical rotary kiln feed end block.

Of the variables involved in the operation of the rotary kiln, those which have the greatest effect upon the life of the refractories are: (1) the chemical composition of the sludge entering the kiln; (2) the amount of moisture introduced; (3) the extent of the insulation of the kiln lining; (4) the use of chains in the feed end section; (5) the fuel and type of burner and (6) the burning practice; and, finally, (7) the continuity of operation.

The chemical analysis of the sludge is important since the refractories in the burning and intermediate zones are subjected to increasingly severe conditions as the percentage of alkalies in the sludge increases. Variation in moisture content of the sludge may result in correspondingly wide variations in the rate of firing necessary to produce lime at the desired rate. Insulation of any rotary kiln usually becomes a consideration where waste heat boilers are included in the system; such insulation naturally affects the conditions which the refractories must meet since it decreases the amount of heat radiated from the shell and causes higher brick temperatures.

In recent years a number of kilns have been equipped with chains in the feed ends; where these are employed and refractories used for lining the chain section, the refractories may be required to resist the severe abrasive action of the chains dragging upon the lining. The type of fuel and method of operation of the burner obviously involve many details which have decided effects upon the refractory lining of the kiln. Reference to some of these effects will be made later. Continuity of operation has an important influence upon the life in service of any refractory construction. Repeated heating and cooling accompanying intermittent operation sets up stresses within the brick which may result in cracking and spalling.

Refractory Lining Practice

Because of the different conditions which prevail throughout its length, the rotary lime sludge kiln may be conveniently divided into three sections designated for convenience (1) the feed end zone, (2) the intermediate zone, and (3) the burning zone. Obviously, the length of any one of these zones will vary depending upon the length of the kiln. For the purpose of illustration, we will consider the lining of a kiln 125 feet long, and discuss the character of the refractory liners best suited to meet the conditions prevailing in the various zones.

Feed End Zone

In the case of a kiln 125 feet long, the feed end zone would generally be considered as a section 25 to 30 feet long at the feed end. In this section, the temperature will be moderate. The brick lining will be exposed to practically no moisture with a relatively dry charge, or to a great amount of moisture with a charge admitted as a

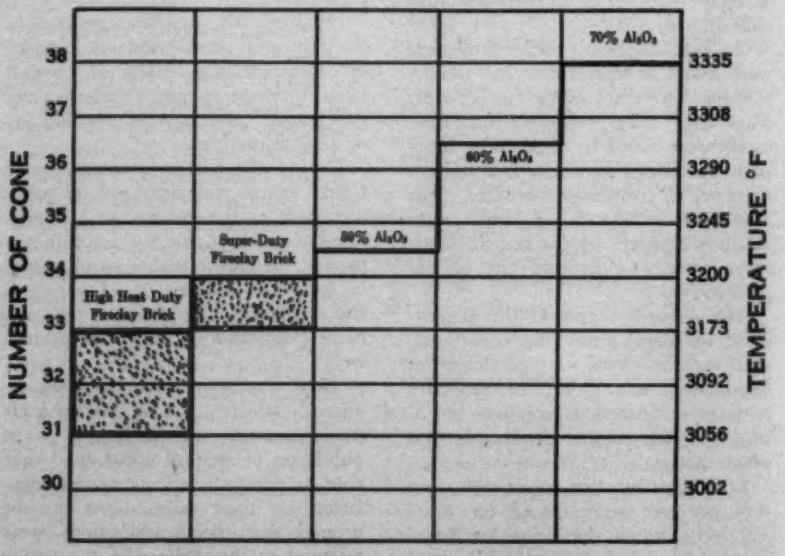


Fig. 2—Refractoriness expressed in pyrometric cone equivalents.

Fig. 3—Rotary kiln burning zone lined with chemically bonded magnesite brick.

slurry. Frequently, in order to prevent losses through splashing or shaking out, special refractory blocks are used at the feed end, as shown in Figure 1. These shapes must be mechanically strong and of homogeneous structure; hence the designing of excessively large units should be avoided. The smaller units also increase the ease of obtaining a tight, close fit of the shapes against each other and against the kiln shell. Relatively small units, especially those having chord dimensions of from 5 to 6 inches, have the additional advantage of resistance to the cracking and spalling effect of rapid changes in temperature. Since the temperatures in the feed end zone are moderate, high refractoriness is less essential for the brick in this zone than are the properties of strength and resistance to temperature change.

The refractory lining of the feed end zone is usually constructed of high heat duty fire-clay brick liners. When chains are not used in this section, the abrasive action of the charge is very moderate. However, when chains are used, the brick may be called upon to resist very severe abrasive action, and therefore should be very dense, hard and strong. Where abrasive conditions are exceptionally severe, exceedingly hard and dense brick such as are used in the chemical industry for acid-resistant service, have been found most satisfactory.

Intermediate Zone

In the kiln 125 feet long, with a feed end zone comprising 25 to 30 feet of this length, the intermediate zone would be thought of normally as the next 50 to 60 feet. In the operation of the kiln, as the charge moves through this section, it meets with progressively higher temperatures until, at the hot end of the intermediate zone, the temperature may be sufficiently high to result in some chemical reaction between the kiln charge and the refractory lining. In marked contrast with rotary lime kilns producing virgin lime from limestone, there is relatively little abrasion by the charge in the intermediate zone of a sludge kiln. The most widely used liner for intermediate zone service is one of the high heat duty fire-clay brick type. While the temperature prevailing in this zone might not in itself require a brick of the high heat duty class, the resistance of the brick to spalling influences must also be taken into consideration. In resistance to this destructive factor, high heat duty brick are very superior to brick of the intermediate or low heat duty classes.

It is also desirable that the liners have as high density and strength as possible without sacrificing the necessary resistance to the spalling influence of rapid temperature changes. High density and low porosity are advantageous in minimizing mechanical penetration of lime and alkalies into the brick structure. Such penetration may change the structure of the brick materially, causing a closing of pores through the formation of complex glasses with the brick material. Brick so affected are less resistant to thermal shock caused by the unavoidable fluctuations in temperature resulting from burner adjustments, or from shutdowns.

Among the properties which distinguish super-duty fire-clay brick from brick of the high heat duty fire-clay type are, higher refractoriness or fusion point, greater density, and greater resistance to thermal spalling. These properties of super-duty fire-clay brick are most important in any consideration of this class of refractory for use in rotary lime sludge kilns. Super-duty fire-clay brick have a fusion point very materially higher than that of even the most refractory high heat duty

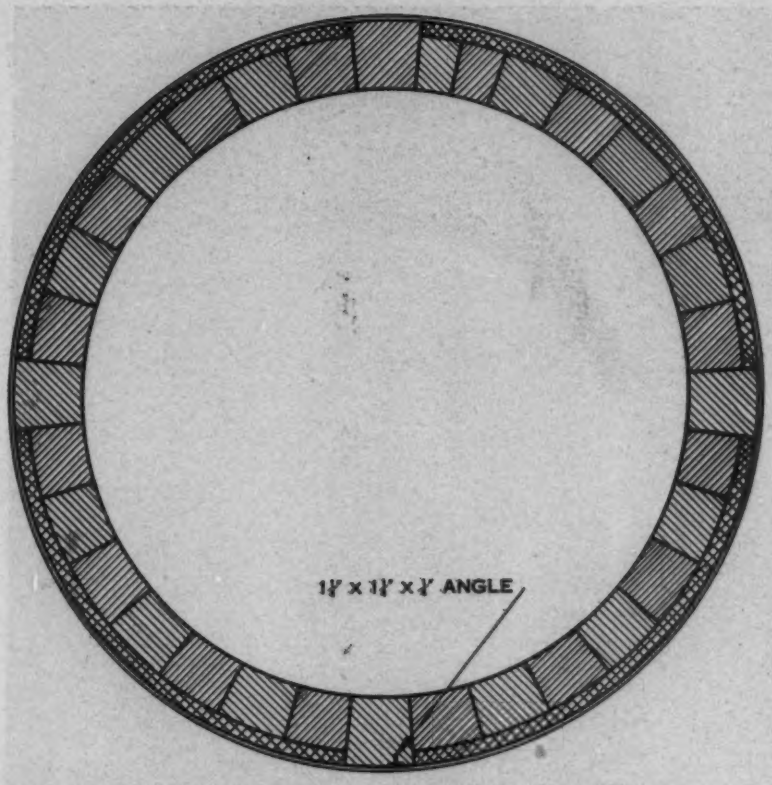


Fig. 4—Typical section through insulated portion of a rotary kiln.

fire-clay brick. Their porosity is 2 to 5 per cent lower and their resistance to thermal spalling much higher than that of most high heat duty fire-clay brick. Super-duty brick provide a very worthwhile margin of superior quality for that section of the intermediate zone which adjoins the burning zone, which is of especial importance in those installations where high resistance to spalling and fluxing action are greatly to be desired.

Burning Zone

In the 125-foot kiln considered, the burning zone normally would comprise a length of from 25 to 40 feet between the intermediate zone and the discharge end of the kiln. In this section, maximum kiln temperatures are maintained, and accordingly any chemical reaction between the kiln charge and the brick lining occurs at maximum intensity. With refractories of the alumina-silica type, it has been repeatedly demonstrated that resistance to chemical attack by basic fluxes increases approximately in proportion to the alumina content. (See Figure 2.) High-alumina brick of the 50, 60 and 70 per cent alumina classes are being used successfully in the burning zones of lime sludge kilns. Of these, liners of the 70 per cent alumina class are now used most extensively. Certain operators who have made a very careful study of their kiln lining service have demonstrated that the lowest overall burning zone lining costs are secured by the use of liners of both the 60 per cent and 70 per cent alumina classes. When this construction is adopted, liners of the 70 per cent alumina class are installed for a length of about 20 feet in the portion of the burning zone where the highest temperatures prevail, and liners of the 60 per cent alumina class are installed in sections about 10 or 15 feet long adjoining the hottest section of the burning zone at each end.

When the operating conditions are so severe that even the best 70 per cent alumina brick give only relatively short service due either to high temperature or to high alkali content of the sludge, the use of chemically bonded magnesite or of hard burned magnesium silicate (forsterite) liners merits careful consideration. Both are being used to advantage in lime sludge kilns in the paper industry. (See Figure 3.)

The chemically bonded magnesite liners are basic in character and have great resistance to chemical attack by basic fluxes in the sludge. These brick usually contain a small percentage of chrome ore, which could be expected to impart some discoloration to the lime charge passing over it; however, in practice this discoloration is so slight that it has not been found objectionable. In installing chemically bonded magnesite liners, thin steel plates of 20 to 16 gauge are placed in the radial joints between the brick. In service these plates oxidize at the exposed heated ends and melt, penetrate the brick structure and form a tight monolithic lining.

The hard burned magnesium silicate (forsterite) liners are likewise very resistant to chemical attack by basic fluxes and their installation is accomplished in the same manner using thin steel plates in the radial joints.

In this general class of refractories, both the chemically bonded magnesite and the magnesium silicate brick are outstanding for low thermal conductivity and for high resistance to spalling resulting from thermal shock.

Up to the present, it has not been found necessary to use magnesite brick other than those of the chemically bonded type in lime sludge kilns of paper mills. However, the results obtained from hard burned magnesite brick in the burning zones of lime kilns used in the chemical industry for the recovery of lime sludge and in kilns producing virgin lime, may become of increasing interest to paper-mill operators in the future. The brick are laid in the same manner as are the chemically bonded magnesite brick, that is, with steel plates in the radial joints. However, because of the somewhat higher thermal conductivity of the hard burned magnesite brick, in some instances, a backing of fire-clay brick may be installed between the magnesite liners and the kiln shell. This very materially decreases the amount of heat radiated from the section so lined and forms a strong and rigid backing for the basic liners.

Since temperatures in the burning zone are extremely high, it is not considered practical to insulate the lining other than by the use of a fire-clay brick

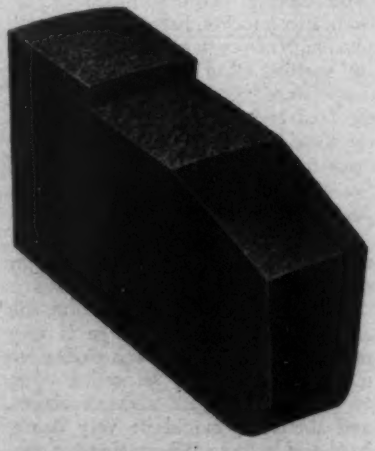


Fig. 5—Typical rotary kiln discharge end block.

backing. Where waste heat boilers are in series with a rotary kiln and insulation is desirable to conserve heat, its use is confined to the intermediate and feed end zones. In order to give stability to the insulated section, two or three complete rings of uninsulated refractory liners may be used to advantage at approximately 10-foot intervals. It is desirable also to place uninsulated refractory liners at quadrant points within the rings of insulating brick to stiffen the construction further. (See Figure 4.) Furthermore, in order to prevent movement of the insulated lining, it has been found advantageous to install an anchor block at one point in each lining ring. These anchor blocks are provided with slots and fit over angle irons riveted or welded to the inside of the shell.

Frequently, special nose blocks are provided for the discharge end of the kiln. (See Figure 5.) The proper design of these blocks and selection of the proper materials for use in their manufacture, are factors of considerable importance. In general, nose blocks should be as short as is practicable and the interior chord preferably should not exceed 4½ to 5 inches. The nose blocks may be made of high heat duty or super-duty fire-clay material, or of high-alumina material. The choice will be influenced by the kind of fuel used, the type of burner, the burner adjustment and the care exercised in the operation; all of which have a very considerable effect upon the results secured from the refractory lining. With powdered coal firing, the flame is generally long, and the temperature at the discharge end relatively low; hence, the use of high heat duty fire-clay brick liners in a 5- or 10-foot section at the discharge end is a safe economy. With oil firing the flame is usually shorter and the temperatures considerably higher, and most operators therefore prefer to use high-alumina liners for the entire discharge end, in some instances even including the nose blocks, as well as for the burning zone. With gas firing, the lining practice varies considerably, dependent upon the length of the flame and the location of the section where highest temperatures prevail.

Installation of Refractory Liners

Rotary kiln liners of fire-clay or high-alumina material usually are furnished in either the conventional form of rotary kiln blocks or in the form of blocks of the arch type. For basic liners it has been demonstrated that the latter type is preferable.

Standard rotary kiln blocks of the conventional form are supplied in two series, in one of which the radial dimension measures 9 inches and in the other 6 inches to form linings 9 inches and 6 inches thick, respectively.

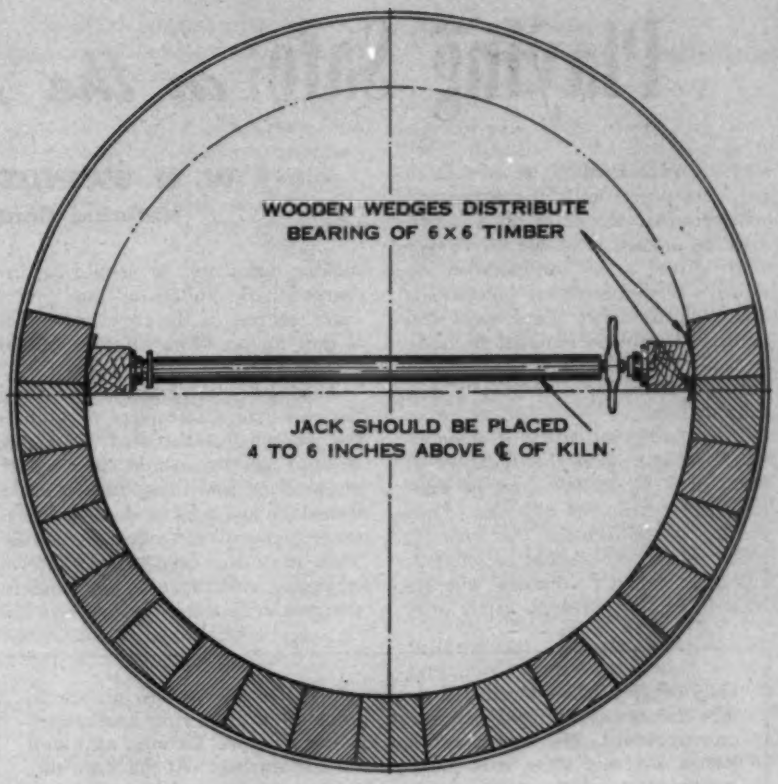


Fig. 6—Method of jacking lining in rotary kiln.

Linings of other thicknesses have been used from time to time, but at considerable disadvantage. These require blocks which are neither standard nor readily available from the regular stocks carried by most manufacturers. Moreover, because of the increased cost of producing non-standard sizes, their use results in materially higher costs of the linings.

Most operators prefer to lay the liners dry and in ring construction. Because of the slope of the kiln shell, it usually is considered best practice to begin the laying of any given section of lining at the point nearest the discharge end of the kiln and to progress toward the feed end. A preferred method of lining consists of laying approximately 10 feet of lining up to a point slightly above the kiln axis, next, of bracing the top liners on each side with heavy timbers, and then, of holding these timbers firmly against the brick with jacks or trench braces. (See Figure 6.) The kiln is then turned one-fourth revolution and additional blocks are laid to a point slightly above the kiln axis and braced. The next quarter turn of the kiln brings the remainder of the lining into such a position that keying of the final brick in each ring can be accomplished very conveniently. Standard rotary kiln blocks are made to have a 9-inch outer chord and an inner chord of the proper length to permit the liners to turn the circle of the kiln. However, it is necessary in almost all cases to cut the final block in order to obtain a tight ring. Best practice dictates that in no case should this final key be less than one-half of a full block. Accordingly, when the space remaining in the ring for the final key is such that less than one-half of a full block is required, it is best to cut two blocks.

In repairing a section of the lining, it is of course impossible in the last ring of the section to drive key brick from the side as it is done in the other rings. The usual practice is to trim the blocks adjacent to the final key so that a straight slot is obtained. The key block is then trimmed so that it is a straight and is driven into the final space. If this operation is conducted carefully and a tight fit is obtained, the fact that the last brick in the ring is not keyed causes no difficulty.

As a kiln shell becomes older, it may get out of round because of the lining wearing thin and permitting the shell to get hot at some spots. Accordingly, standard rotary kiln blocks designed to

(Concluded on page 1205)

Playing Safe *in the Mill Yard*

W. H. SWINDELL, Yard Foreman
National Container Corporation

▸▸▸ YARD LABOR in a Southern pulp and paper mill is predominantly colored. All too often it is supervised by a foreman of the driver type who gives little consideration to safety. If the foreman, however, is interested in safety (and most certainly it should be required of him) he can develop an enviable record of accomplishment by following a few simple rules.

In planning for safety, it is necessary to begin with the selection of personnel. Great care must be exercised in the hiring of new men. Only the most intelligent of the available supply of laborers should be selected; and then, should a workman, who has been hired, fail to work safely after suitable instruction, he should be discharged. By following this procedure, the rest of the crew know that if they do not work safely, they too will be dismissed.

The next consideration in making the mill yard a safe place to work is the grouping of the men for a task at hand and the instructions that are given them for doing it. When a hazardous job is to be done, select at least three or four experienced men. Then place the necessary number of additional workmen with them and assemble the crew on the job. At this point, explain the work to be done, what the hazards are in doing it, and how it should be done to avoid an accident. The remarks should be simple so that they cannot be misunderstood.

If a heavy lift is to be made, tell the men where to take hold, to come up all together, and to ease down together. With a crew working in unison, there is no need for strains or pinches.

After a job has been finished, compliment the men, stressing especially the fact that it was done safely. If more of the same jobs are to be performed, inspire the workers by suggesting the possibility of doing each succeeding job a little better, a little quicker, and even more safely than the job preceding it. The best tonic for men, including foremen, is to compliment them. A compliment puts pep into them and makes them go ahead.

Equal in importance to the selection of personnel is the inspection of

EDITOR'S NOTE: During the past thirty-five years, the author of this article has worked with negro labor without having had a serious accident. He was a section foreman before he was eighteen years old, and later was promoted to roadmaster. At the time this article was written, approximately sixty men engaged in yard labor under Mr. Swindell's supervision had worked for thirty-two months without an accident—a record representing about one-third of a million man-hours.

The author and his crew. Mr. Swindell at the extreme right (wearing hat). Standing next to him is D. J. Brett, Jr., safety director.

equipment. Before directing men to a job, personally inspect all slings, snatch blocks, falls, etc., to be sure that they are in a satisfactory condition. Anything found defective should be replaced. Never take a chance with worn or rotten rope, etc.; fatal accidents have resulted from their use.

In the handling of hot ashes or reburned lime, workers should be cautioned about stepping into the hot material. This word of warning is necessary to avoid burned feet. It also is important to stress the danger of eye injuries from flying dust incident to these operations.

Some men were observed recently in preparation for the splitting of some logs with steel wedges. The heads of the wedges selected by the men were burred badly. Therefore, new wedges were replaced for those with the burred heads before starting the job to avoid any possibility of a chip of metal flying from a wedge and hitting a worker, possibly putting out an eye.

In safety as in anything else, the way to get co-operation is to do things to cause men to like you. As a rule, workmen are what the foreman makes of them. Of course, they have different dispositions, and the foreman of a crew must learn these differences and deal with each man accordingly.

A foreman should not play or joke with the workers. However, he must let them know that he is their friend. In case of trouble, if the workers are in the right, he should support them. In case of sickness, he should do everything possible for the person or persons ill.

Accidents, as well as other ills, result sometimes from interference of superiors; for example, a superintendent going over the head of a foreman and giving orders directly to the men. Unless the situation is unusual, this practice should not be indulged in, since it creates confusion and confusion causes accidents.

Here are a few "Don'ts" for mill yard foremen:

1) Don't let your men work with torn gloves or ragged clothes.

2) Don't let your men unload lime without goggles and respirators. (Always see to it that they are supplied with a suitable lotion for application to caustic burns on the skin.)

3) Don't allow your men to roll wheelbarrows over gangplanks before fastening the gangplanks securely.

4) Don't permit your men to ride on running boards of trucks or to jump on or spring off of trucks in motion. (Insist that they climb on and get off safely.)

Finally, to promote safety, keep the most experienced men; also talk safety to the entire crew the first thing every morning and remind them of it often during the day. Accidents are avoided by stressing safe practices constantly. In short, in order to attain safety in mill yard operations, it is necessary for the foreman to keep everlastingly at it.

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Refractories for Lime Recovery Kilns

(Continued from page 1203)

fit a perfect circle would require some trimming to fit a slightly out of round shell satisfactorily. A convenient provision for overcoming this difficulty is to include with the shipment of the blocks which would fit the true circle, a number of standard blocks designed for a shell 6 inches smaller in diameter, and other standard blocks designed for a shell 6 inches larger in diameter. By using such blocks in the proper combination the inequalities in the roundness of the kiln can be taken care of without costly and time-consuming cutting.

In recent years the arch-type block, having a very much smaller chord than the conventional rotary kiln block, has come into ever increasing use for kiln linings. Use of blocks of this type increases the number of radial joints in an individual ring, but decreases the number of joints per running foot of kiln lining. The larger number of radial joints provides for the relief of stresses set up by alternate heating and cooling and of such stresses as may occur as a result of slight distortion or weaving of the kiln.

In Conclusion

At first thought, it might appear that the selection and maintenance of a refractory lining in a rotary kiln operating on lime sludge should be relatively simple. However, due to the wide variation in operating conditions from plant to plant, this is not a mere matter of routine, but requires the exercise of keen discrimination and experienced judgment based upon accurate service information. The wide variety of refractory liners available permits the choice of materials best suited to meet the operating conditions in each section of the kiln. Only by the proper selection can maximum efficiency of operation and lowest cost for refractories per unit of output be obtained.

Alaska's Pulp Producing Possibilities

(Continued from page 1197)

change with which to purchase munitions from the U. S. Several years of total war might change this picture completely. While Canada would still be a friendly country, this country might run short of foreign exchange. If at the same time we had no spare munitions to send to Canada in exchange for newsprint, it would certainly be more feasible to purchase our paper within a dollar block which included Alaska.

These suppositions are all theoretical, but they could happen. There remains an important reason why Alaska should be developed at the present time. The building of defense posts would have been greatly facilitated if Alaska had been more fully populated and if more peace industries had been in progress. A sparsely settled wilderness is difficult to defend. It is also believed that there are substantial deposits of tin and other strategic minerals which we will be needing soon, in addition to the antimony mine already mentioned. The probabilities are, therefore, that our Government may do something about it before long, and develop Alaska at the expense of China and other foreign countries.

It may thus be concluded that while it is not feasible to manufacture pulp and paper in Alaska at the present time, a change in government policy or a shift in the economic balance between the United States and Canada may call for the development of this northern Territory in order to supply paper for this country's war needs.

(The illustrations used with this article are reproduced through the courtesy of the U. S. Forest Service.)

A Review of Paper Controls of Two World Wars

(Continued from page 1198)

Red Rosin Building Paper, Carpet and Packing Paper, Plaster Board (curtailment)—Eliminate half-roll packages, discontinue use of coloring matter, and limit paper weights to three.

Binder Board (standardization)—Board weights limited to nine.

Lithograph Display Ads (curtailment)—Tonnage reduction of 25 per cent.

Retailers (conservation)—Use of window display to encourage the public to save waste paper.

November

Medical Textbooks (general conservation).

Business Men (conservation)—Seven suggestions offered for saving office stationery.

House Organs (curtailment)—Tonnage reduction of 25 per cent.

All of these restrictions were quickly lifted from industry following the Armistice, the last of the restrictions was canceled on December 18, 1918.

Effects of chemical controls on the paper industry came much later in the progress of the first war than during the current emergency. While control over chlorine and other chemicals began some time before the attack on Pearl Harbor, in the first war era this country had been involved in the war for more than a year before the War Industries Board established control over both the production and distribution of chlorine. This took place in July, 1918, and civilian supply was not then reduced. It was not until October, 1918, that arrangements were made for curtailing allocations of chlorine to paper mills and other customary civilian consumers.

Paper manufacturers agreed at that time to reduce their consumption by 50 per cent. However, the end of the war in the following month eliminated the need for restricted industrial consumption before it became apparent in the retail market.

According to the Department of Labor study, the substitutions of lower quality paper by some publishers in the last war was apparently due to efforts to reduce costs, rather than to limitations imposed by the war effort.

While sulphur was brought under control by the War Industries Board in the last war, the report on the paper industry indicated that no restrictions were placed upon the sulphur consumption of the paper industry.

Reduction in the allotments of papermaking materials in addition to chlorine were in prospect for early 1919, with the end result that the quality of paper would have been changed considerably. However, with the end of the war coming a month after the chlorine order, proposed reductions in the volume of raw materials to be apportioned for papermaking were canceled.

In general, while the industries using paper as a raw material were severely restricted, the paper manufacturing industry in the last war was probably less affected than most other large industries.

Take Time to Write Letters

W. F. SCHAPHORST, M. E.

▸▸▸ MOST PAPER MILL MEN would rather work a whole week than to sit down and devote a solid fifteen minutes to writing a letter. One important advantage about writing is the valuable advice that can be had, gratis, by simply penning one's troubles to the manufacturer, or to several manufacturers.

For instance I have in mind a leather crimp on a plunger that was continually giving trouble. New crimp after crimp was installed. They would fail almost as rapidly as they were put in. Did the paper man write to the crimp manufacturer and give him a word picture of conditions? He did NOT. He seemed to think it was easier to buy new crimps, and install them as rapidly as the previous one failed.

Crimps often fail prematurely due to improper installation or to the fact that the plunger has worn excessively. Any of these conditions can usually be inexpensively corrected. The simplest and perhaps the best way in which to take care of a problem of this kind is to send one of the crimps that has failed to the manufacturer of the crimp for analysis. If a crimp fails due to improper installation it generally tells its own story plainly enough so that experienced engineers can detect the cause of the trouble. A lengthy letter is seldom necessary. A sketch and a few words, all of which can be jotted down in a moment or so, will suffice. The manufacturer's engineering staff will then gladly do the rest.

I have in mind one instance where crimps were giving no end of trouble. The user thought it was due to the "high pressure" of the water. He thought, "The packing is only leather. There isn't a leather on earth that will hold up better than this is doing now, so why should I write to the manufacturer about it?" But he finally did write, and, much to his surprise, the manufacturer's engineers showed him how to double the life of the crimp by making a very simple change—putting a washer under the crimp to reduce wear on the shoulder.

Some paper mill men don't write letters because they fear they will be pestered by salesmen. If you don't want salesmen to call, simply say so. Most manufacturers do their level best to comply with all reasonable requests made by customers and prospective customers.

PAPER SKETCHES

A SMALL DECORATED PASTEBOARD COFFIN, MADE DURING THE MIDDLE AGES IN PERSIA FOR THE BURIAL OF A FALCON, IS NOW ON DISPLAY AT THE DARD HUNTER PAPER MUSEUM, M.I.T. CAMBRIDGE, MASS..

Tuhle

AS EARLY AS 1863, BERLIN GERMANS USED PAPER CUPS IN WHICH THEY SERVED STEAMING HOT COFFEE.

SO INDISPENSABLE WAS PAPER TO CHINESE OF THE MID-1800'S THAT A CERTAIN QUANTITY FREQUENTLY WAS SECURED TO WIVES IN MARRIAGE CONTRACTS.

THE 52 ISSUES OF LIFE MAGAZINE FOR 1940 CONSUMED MORE THAN 88,000 TONS OF PAPER. THESE MAGAZINES, IF PLACED INDIVIDUALLY END-TO-END, WOULD MORE THAN ENCIRCLE THE WORLD AT THE EQUATOR.

The Paper Industry's Pledge

"Co-operate to Win the War"

▸▸▸ THE ANNUAL CONVENTIONS of the paper industry have always been a worthwhile institution in providing for the exchange of technological ideas, and for the warm, stimulating human intercourse without which the industry itself would be a soulless thing of wheels and gears.

But in this year's turmoil, the five-day convention at the Waldorf-Astoria was even more significant to the hundreds of paper men who somehow managed to get away from their work-laden desks to attend.

What did the convention accomplish? Briefly: It brought a score of government men into a frank man-to-man discussion with the industry on how best to co-operate in winning the war.

It showed each attending member of the industry that he and his colleagues are united for the duration—and that each member's objectives are the same.

Out of it came increased mutual repect of the Government for industry, industry for the Government, and recognition that both democratic government and private enterprise are well worth fighting for.

Those who went to New York found quite a wartime atmosphere at the Waldorf, contrasting strongly with previous conventions. Youthful, efficient-looking OPA men rubbed shoulders with important, distinguished-looking paper executives. Throughout the crowded lobby there was a sprinkling of military uniforms. In the elevators musical feminine voices called out the floors. The elevator boys were all in defense jobs or the service.

Despite the social get-togethers and parties that are part of every convention, there was an underlying note of seriousness.

The principal speakers this year were the men from Washington—paper experts from the WPB, the OPA, etc.—men who had come to explain the part required of the paper industry in winning the war.

The meetings were well-attended and the leaders of the paper industry were very intent on what the Washington men had to say. And when they had said it, the applause of the paper men was loud and long. Spokesmen for the industry emphasized again and again the determination of paper to give *even more* than Washington asked in helping to win the war. The paper industry's enthusiasm and its expression of how best to co-operate thus became the theme of the entire convention.

It was the unanimous opinion of paper men that the industry's record of co-operation with Government during the past year qualifies the industry for a maximum of self determination in the future.

It was brought out in no uncertain terms in the long sessions of the A.P.P.A., N.P.T.A., and S.A.P.I. that, if the paper industry has experienced some discomfort up to this point, the shoe from now on is really going to pinch.

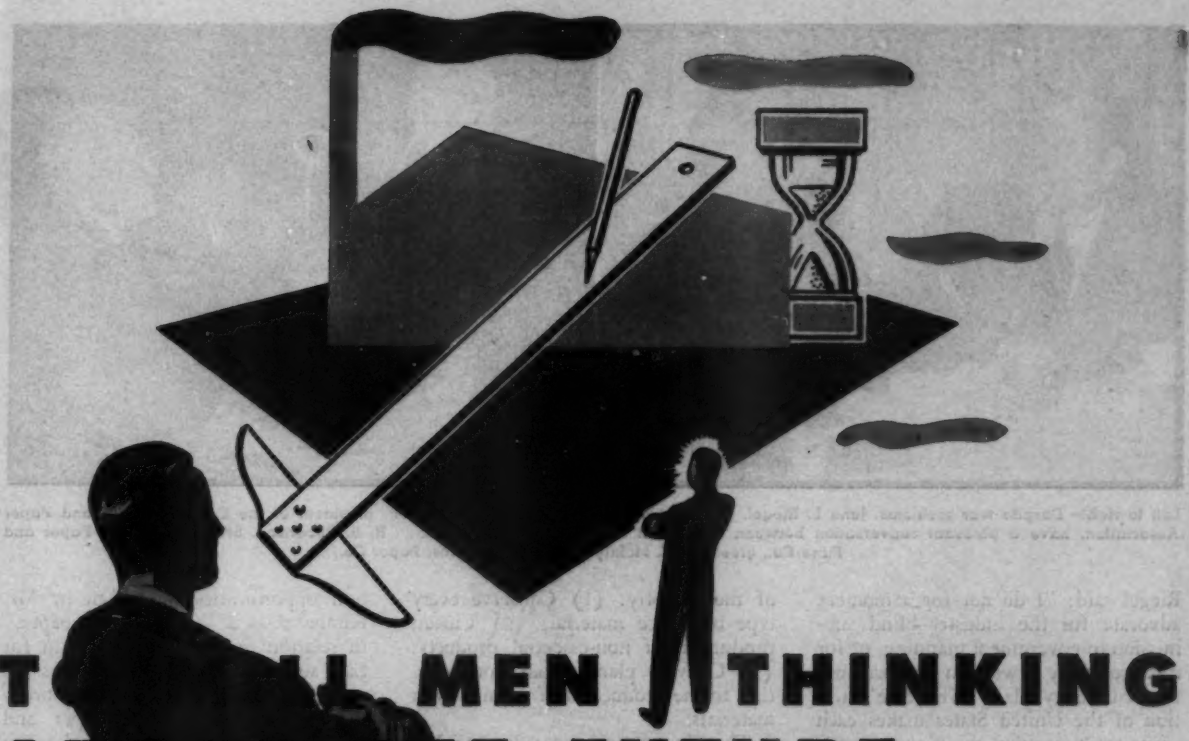
That the industry has been well aware of the severity of this situation was evident in the final report to the A.P.P.A. by Retiring President John L. Riegel. Mr. Riegel cited the Industry's production record of 1941—during which period mills, through maximum operation, produced nine per cent more than government officials had thought possible.

It was acknowledged that the industry's first duty is to bend every sinew to help the Government win the war.

The spirit in which this should be undertaken was well interpreted by Mr. Riegel, and was later expressed in much the same words by other paper industrialists.

While pledging united support, Mr.

Symbolic of co-operation between the paper industry and the Government, John L. Riegel (left), president of A.P.P.A., and J. R. Kimberly, of the WPB, shake hands before the flag . . . and it isn't just a picture—they really mean it. . . . Yes, the Army was represented at the convention, too. The two men in uniform are: Capt. C. M. Boris (left), of the Quartermaster-General's Department, Washington, and Lieut. R. B. Hamilton, of the Jersey City Quartermaster's Depot.



T[illegible] MEN THINKING AB[illegible]E FUTURE . . .

● After victory, will you be satisfied with your old markets? Will you be satisfied to make the same old grades? Will you be satisfied with your present cost of production? Or do you feel you could profitably make some improvements?

● This message is addressed to those mill men who believe that **now** is the time to consider such important matters.

● In recent years, Black-Clawson-Shartle-Dilts have helped many mills work out valuable improvements. One of our client mills dreamed of a diagonal creped paper . . . and together, we made it possible. Another dreamed of longitudinal flutes . . . again we helped them get the desired result. Similarly, we may be able to bring **your** dreams to practical reality.

● At the present time, our staff of trained sales engineers has but one job . . . to help you get the most out of your present equipment . . . to help you plan for the future. If you could use a trained observer, without incurring the slightest obligation, write us when you want him to call.

The Black-Clawson Company, Hamilton, Ohio.
Shartle Division, Middletown, Ohio.
Dilts Division, Fulton, N. Y.

BLACK-CLAWSON

Left to right—Despite war problems, John L. Riegel, president of A.P.P.A., and R. L. Weldon, president of the Canadian Pulp and Paper Association, have a pleasant conversation between courses at the A.P.P.A. luncheon. . . . R. B. Robertson, Sr., of Champion Paper and Fibre Co., greets W. E. McIntyre, of McIntyre Bros. Paper Co.

Riegel said: "I do not for a moment advocate for the industry blind submission to government planning, or for each company a wooden conformance to an industry plan. The free tradition of the United States makes each of us try to see that the Government's plan is the best possible one, and the genius of the American people for individual initiative makes each company strive for its maximum development within the framework of the industry plan."

The Government's attitude was expressed concisely by J. R. Kimberly, of Kimberly-Clark Corporation, now supervisor of several WPB industry branches. Mr. Kimberly summarized the following requests by Government of the industry: (1) Conserve every type of scarce material; (2) Curtail production of non-essential products; (3) Convert plants from non-essentials to the production of essential war materials.

The Government, according to Mr. Kimberly, agrees that the paper industry has done an excellent job thus far. He only hoped the same unbiased spirit of co-operation would prevail "when the shoe really begins to pinch." In this, the Government was friendly, but firm.

"Those who can't fall into line," said Mr. Kimberly, "are going to have to take the consequences." The admonishment was not without a note of encouragement, however. Substitution opportunities were seen by Mr. Kimberly as a "challenge to paper," in relation to the shortage of tin for cans and other types of containers.

R. B. Roberston, executive vice president of the Champion Paper and Fibre Company, acted as spokesman in giving Mr. Kimberly the industry's conception of how best the co-operation can be carried on, and his views were reflected pretty steadily among paper men throughout the convention.

First, said Mr. Robertson, the industry should do everything it is asked to do—and more. It should seek out ways of its own to co-operate with the Government. Second, the industry should *continue to be the paper industry*. Paper men at the convention felt very strongly that all remaining power possible should be retained by the industry in its own expert self-management. Particularly, it was generally felt that *internal* problems of the industry could best be solved *internally*.

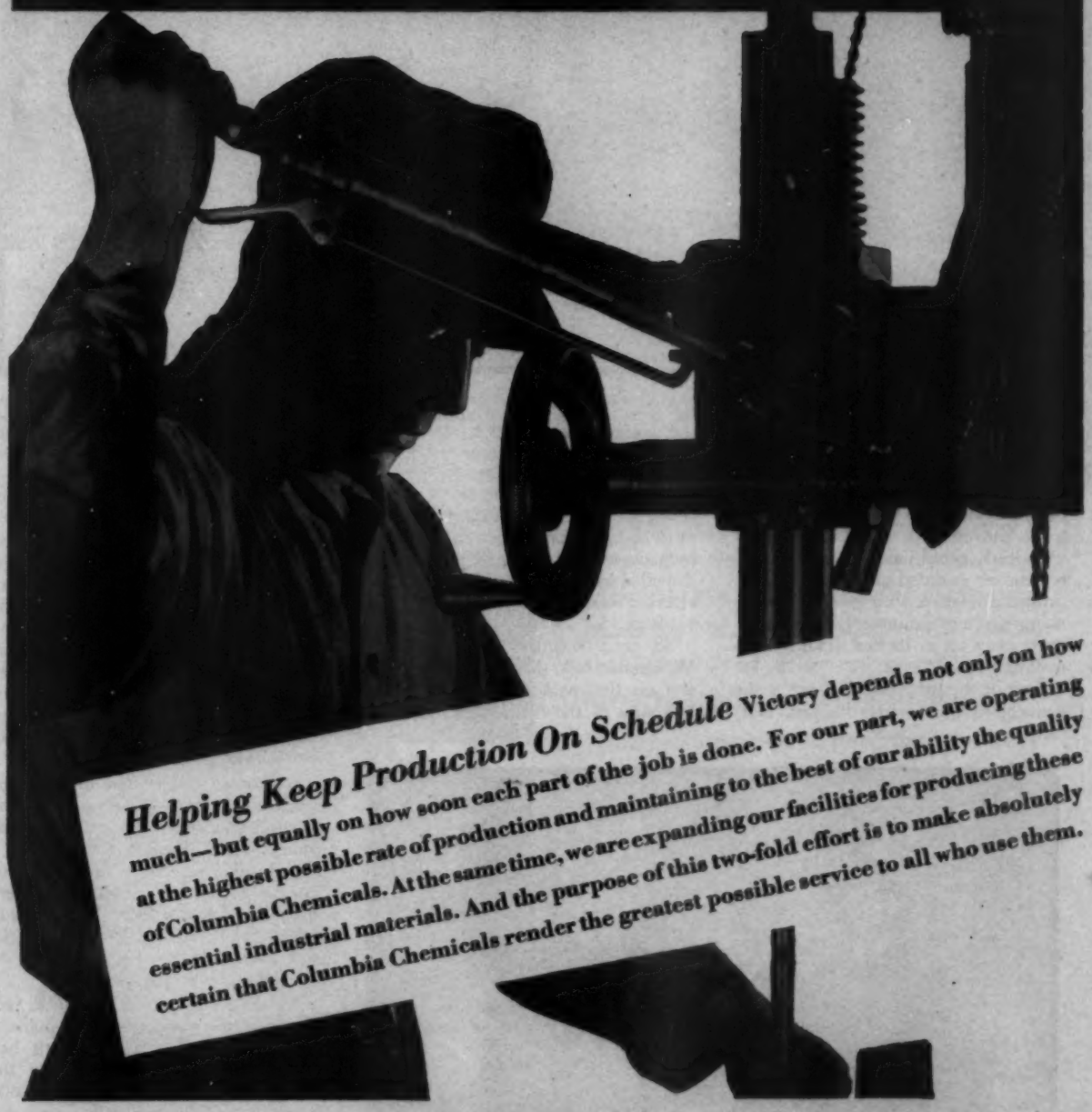
And these problems are expected to be legion. Personnel shortages, transportation bottlenecks, increased scarcity of this and that, equipment maintenance, and so on. All these brain-teasers will have to be solved on the narrow battleground between high costs and price ceilings. The men from Washington admitted it to be a job only for experts.

If the convention had accomplished nothing else, it would have succeeded in sending the WPB men back to Washington with the industry's production record firmly in mind, and with at least the personal conviction that best results will be obtained if the industry is given a maximum of self management.

The paper men, too, had a chance to get their feet more firmly on the

A group of paper men relax and chat a while at the convention. (L. to R.): Harold Keil, Millcraft Paper Co., Kendall Wyman, C. F. Chaplin, Alex Thomson, Jr., and Charles A. Labor, all of Champion Paper and Fibre Co.; George Welp, advertising manager of International Printing Ink Co.; and S. Enoy, Jr., of the Champion company.

COLUMBIA CHEMICALS



Helping Keep Production On Schedule Victory depends not only on how much—but equally on how soon each part of the job is done. For our part, we are operating at the highest possible rate of production and maintaining to the best of our ability the quality of Columbia Chemicals. At the same time, we are expanding our facilities for producing these essential industrial materials. And the purpose of this two-fold effort is to make absolutely certain that Columbia Chemicals render the greatest possible service to all who use them.

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*Precipitated Calcium Silicate **Precipitated Calcium Carbonate

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CLEVELAND • MINNEAPOLIS • PHILADELPHIA • CHARLOTTE

R. E. Robertson, Sr., (left) executive vice president of Champion Paper and Fibre Co., delivered a stirring address at the A.P.P.A. luncheon. Seated next to him at the speakers' table are: (L. to R.) J. R. Kimberly of Kimberly-Clark Corp., now supervisor of Pulp and Paper and several other branches of the WPB; John L. Riegel, president of the A.P.P.A.; R. L. Weldon, president of the Canadian Pulp and Paper Association; E. W. Tinker, executive secretary of the A.P.P.A.

ground. While it was mutually noted that even the repair shops may have to be converted to ordnance work, it was clearly established that paper itself remains an essential product in the war program. Hence, with especial care in maintenance of equipment, the industry must carry on in its best traditions of making paper.

One of the most popular men at the convention was smartly buoyant Norbert A. McKenna, chief of the Pulp and Paper branch, WPB. Any doubt as to co-operation of Government and industry would have been immediately dispelled by the ovation Mr. McKenna received when he got up to address the N. P. T. A.

So great was the interest in Mr. McKenna's talk that practically every seat on the main floor and first two balconies of the Grand Ballroom was occupied several minutes before his appearance on the platform.

"We deserve to survive and perhaps to prosper in the war when we serve the needs of war," was the way Mr. McKenna put it. To hear a representative of the Government so conversant with industry's point of view was an encouraging basis for all-out co-operation. Paper men appeared grateful to Mr. McKenna for a firm understanding of what the paper industry has done and is capable of doing.

His advice was often directed towards maintaining the self-government that industry desires to preserve. "Ask your customer for a letter, or even a signed affidavit, stating that he is not storing inventories," Mr. McKenna warned. "Otherwise . . . your trade might not be trusted to do the job." The speaker believed industry can do the job without rationing.

Mr. McKenna introduced Uncle Sam as one of the industry's big customers. This year the Government will buy 100,000 tons of fine papers for the Government Printing Office, 350,000 tons of board for shell containers, and 200,000 tons of kraft for wrapping.

One of the jobs of the paper merchant, said Mr. McKenna, is to find new uses for paper in essential places where it might substitute for metal now going into direct war use.

He urged continuance of the sound business practices that have always characterized the paper industry. To conserve tires on paper trucking fleets,

Following the A.P.P.A. luncheon, these four were found in earnest conversation: (L. to R.) John R. Kimberly, of the WPB; R. A. Hayward, of KVP (Mr. Hayward was elected president of TAPPI for the coming year); John L. Riegel, president of A.P.P.A.; and F. G. Robinson, a past president of the Canadian Paper & Pulp Association.

TO ASSURE VICTORY
BUY UNITED STATES DEFENSE BONDS & STAMPS

This 202" Bagley & Sewall paper machine is installed at the Rayonier Corporation plant in the state of Washington. The photograph shows part of the drier section with Timken spring-mounted drier roll bearings which have replaced those previously used.

Timken spring-mounted bearings permit any degree of expansion within practical limits and at the same time hold the rolls in constant alignment. *There is no lateral movement of any bearing member within the bearing housing.*

Paper is a vital war commodity. Paper mill equipment anti-frictionized with Timken Bearings will assure an ample supply.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

Manufacturers of Timken Tapered Roller Bearings for automobiles, motor trucks, railroad cars and locomotives and all kinds of industrial machinery; Timken Alloy Steels and Carbon and Alloy Seamless Tubing; and Timken Rock Bits.

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TAPERED ROLLER BEARINGS

he suggested careful ordering of neverless-than-full carload lots. Little things, like brake adjustments and putting speed controls on trucks, he said, would save tires.

This type of thing, in fact, permeated most of the conversations among the small knots of men milling through the corridors of the Waldorf. One paper man thought more business was being discussed this year than ever before. The formal stag dinner that most of the executives attended before going home was hardly as gay an affair as their wives might suspect. Even while the entertainment was going on, you could always find somebody willing to talk about *paper*.

Those at the convention who met R. L. Weldon, president of the Canadian Pulp and Paper Association, had a chance to learn how the Dominion's largest industry has worked in double harness with Government during its past two and a half years of war. The Canadian industry, Mr. Weldon explained, has kept pace with its Government in setting up its own centralized co-ordinating agency — the Wartime Service Department—consisting of a full-time staff in charge of a competent engineer. This agency acts in a fiduciary capacity to every member of the Canadian industry and any department of Government whose controls affect the industry.

Mr. Weldon also described the conversion of machine shops at Canadian paper mills to handle defense subcontracts and help to overcome a bottleneck in machine tools. Approximately

Above—Some of the A.P.P.A. staff members in their suite at the Waldorf. (L. to R.): E. G. Amos, B. R. Cancell, assistant secretaries; E. W. Tinker, executive secretary; John F. Darrow, Washington representative. Right—One of the busiest men at the convention E. W. Tinker executive secretary of the A.P.P.A., emerges from an elevator at the Waldorf.

$5,000,000 worth of mechanized parts, he said, will be produced in the repair shops this year.

It was pretty obvious in the convention atmosphere that most paper executives realized they were "on the firing line" in this war. And there seemed to be a general understanding that the paper industry could do a much better job if it acted as a unit. Intensive individual competition of more peaceful days seemed temporarily put aside.

This rather pleased several of the Government's men, who appeared glad to find an industry already so well organized that its leaders could authoritatively suggest the best methods of co-operation in order to do the job.

For their part, the papermen seemed equally pleased to meet representatives of the Government who exhibited a solid background and much sympathetic interest in the industry itself.

J. F. Strub, chief of the Distribution Unit, Pulp and Paper branch of the OPA—a man with twenty years' experience in the paper field—was invariably found in the middle of a group of paper men interested in policies of survival and co-operation.

R. B. Robertson, Sr., (left), executive vice president Champion Paper and Fibre Co., chats with R. L. Weldon, president Canadian Pulp and Paper Association.

Control

American industry is geared up to the final test which will determine whether or not men, living under a government of their own making, can out-produce the slaves of the Dictator States. So gigantic an undertaking, to be successful, demands Control, sure—precise—unfailing. Control of the efforts of men, Control of the power that drives the machines and last, but not least, Control of the liquids and gases that play so important a part in the processes of modern production.

It is to this phase of Industrial Control that Powell engineers have long devoted their time, their exceptional skill and their years of experience. During this period they have created and put into use a vast array of valves, each one especially designed to perform some specific type of Control. These constitute the Powell Line as it exists today. Tomorrow there will be others, for every day there are new problems of Control which Powell Engineers are called upon to solve.

Thus it is that to the leaders of industry the name Powell represents a service rather than a product. Thus it is that the Powell organization recognizes and assumes the responsibility for the solution of such problems of Industrial Control as must inevitably appear in the great test of industrial strength and skill which war has demanded of our country.

The valve shown is Fig. 1816—All Iron, Flanged End, O. S. & Y. Rising Stem Gate Valve for 125 pounds pressure. Sizes 2" to 30". Also available in Iron Body, Bronze Mounted (Fig. 1793). All Iron Valves are recommended for corrosion service where non-ferrous materials are rapidly affected. Bronze Mounted Valves are for water and steam service.

The Wm. Powell Company
Cincinnati, Ohio

POWELL VALVES

Mr. Strub adhered closely to the functions of his department, which, mainly, are to nip in the bud any inflationary trends in the paper industry. After the last war, he recalled, something like eleven billion dollars was written off in devaluated inventories. He told of one paper merchant who called a meeting of his board of directors and in five minutes had written off the books $200,000 worth of warehouse stock.

In the future it will be only good common sense, Mr. Strub pointed out, to co-operate with OPA and prevent situations like those of the last war, when sulphite jumped from six cents to 26 cents and test liner from $21.50 to $117 a ton. It was admitted that smart chiselers, by speculation and hoarding, might temporarily benefit themselves, but before long would bring terrible harm to the industry. Any such gamblers, it was pointed out, could never go along by themselves if the industry once lost its stability.

Similarly, Charles J. Grant of the Writing Paper Unit of OPA explained the reason behind the Government's request that merchants and manufacturers discontinue the World War I practice of making sales on the basis of prices prevailing at the time of shipment. The reason: It leads to inflation, and inflation leads to catastrophe.

"There'll be no 'boom and bust' this time," said Mr. Grant.

With all this stress on the serious business of Government-Industry planning, it is not to be inferred that the hoped-for personal reunions and yarn-swapping—perhaps even a nip or two—were absent from the convention. Most of the top paper men who rarely meet personally except at the annual conclaves were certainly happy to sit down and pass a few words with colleagues who are facing the same war problems. It was merely natural that the tenor of all conversations was *Survive the War*. Each delegate seemed to recognize that his individual problems could be solved smoother and quicker if tackled with the united help of all the Industry.

It goes without saying that each executive went back to his desk with some definite policies and plans, and the invigorating feeling that both the United States and the paper industry can come out on top.

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SUPPLY DEALERS BANQUET

All previous attendance records were eclipsed by a wide margin at the thirty-fourth annual banquet of the New York Association of Dealers in Paper Mills Supplies, Inc., at the Hotel Commodore, New York, on Tuesday evening, February 17. Such a large crowd attended this year's event it was necessary to switch the banquet from the East Ballroom of the hotel where it has been held for many years to the Main Ballroom of the Commodore. This is always one of the social features of Paper Convention Week in New York, and members of the Association had as their guests many purchasing agents and other executives of paper, board and roofing mills.

After the serving of a sumptuous seven-course repast, an entertaining stage show was put on, the performers including singers, dancers, tricksters, and funsters recruited from the theatre, radio, and night club revues. The festivities continued until about midnight.

Walter H. Martens, chairman of the Association's Banquet Committee, who has arranged the annual banquets for many years, was unable to be present, being home ill, but Secretary Alfred J. Moran took over the reins in behalf of Mr. Martens, and the affair was voted a tremendous success in every particular. Assisting on the Committee were Arthur Rosenfeld, president of the Association, and John L. Nielsen, first vice president.

An attractive 100-page menu and program, containing advertisements of numerous concerns in the trade, was distributed as a souvenir of the occasion. Secretary Moran headed the Journal Committee, assisted by Miss Shirley Rief, Bert Lorenz, Joseph P. Gaccione and Joseph V. Carrano.

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▶▶▶ A FREE SERVICE is offered by the Association of Consulting Chemists & Chemical Engineers, Inc., 50 East 41st Street, New York City. At your request, the Association offers the names of consulting chemists and chemical engineers—located from coast to coast—especially qualified for your particular problem. Information will be given upon request.

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TISSUE SUPPLY ADEQUATE—SAYS THE ASSOCIATION

In a published statement, Ross A. Fife, executive secretary of The Tissue Association, New York City, states that a study of war-time per capita consumption of toilet tissues conducted by the Association reveals that the large government requirements have been met adequately, and it is thought the supply will continue to meet that demand.

Mr. Fife's announcement also states that some time ago the Industry submitted Simplification, Standardization, and Paper Savings Recommendations to the Pulp and Paper Section of WPB providing for further savings and safeguards should unforeseen developments occur.

CONVENTIONS AND COMING EVENTS

April 7—Dinner meeting of the Pacific Coast Section of the Technical Association of the Pulp and Paper Industry at Port Angeles, Wash.

April 17-19 — Southeastern Div. American Pulp and Paper Mill Superintendents Association, spring meeting, Jefferson Hotel, Richmond, Virginia.

May 5—Tentative dinner meeting of the Pacific Coast Section of the Technical Association of the Pulp and Paper Industry at Vancouver, B. C.

June 16-18—Twenty-third Annual Meeting of the American Pulp and Paper Mill Superintendents Association, Grand Rapids, Michigan.

Sept.—Twentieth Annual Conference of the National Industrial Advertisers Association at the Hotel Traymore, Atlantic City, New Jersey (date to be announced).

Sept.—Fall meeting of the Technical Association of the Pulp and Paper Industry, Boston, Mass. (Date and meeting place to be announced later.)

Oct. 5-9—The Thirty-first National Safety Congress and Exposition at the Stevens Hotel, Chicago.

Nov. 17-22—National Chemical Exposition, at the Stevens Hotel, Chicago.

STATED MEETINGS

Technical Association of the Pulp and Paper Industry.

Delaware Valley Section—First Friday of each month—Engineers' Club, Philadelphia.

Kalamazoo Valley Section — First Thursday of each month—Park American Hotel, Kalamazoo, Mich.

Lake States Section—Second Tuesday of each month—Conway Hotel, Appleton, Wis.

New England Section—Third Friday of each month — Roger Smith Hotel, Holyoke, Mass.

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ALKALI

"Production" is main topic at A.P.P.A. Annual Meeting

▶▶▶ ALL-OUT CO-OPERATION with the Government in the national war effort was the guiding theme of the Sixty-fifth Annual Convention of the American Paper and Pulp Association and affiliated organizations in the Waldorf-Astoria Hotel, New York, February 15 to 20, inclusive. The subject of production, more production, and still more production in behalf of the war economy took precedence over all other matters considered at the numerous meetings of the various groups of paper and pulp manufacturers and merchants during the six-day convention.

No other convention in the lengthy history of the American Paper and Pulp Association has witnessed so large an attendance as graced this year's gathering. Seemingly every paper and pulp mill in the far reaches of the United States—and many in Canada—was represented in the horde of paper and pulp men who descended upon the nation's metropolis for their annual confab. It was a serious-minded convention; decidedly so. With the pall of war hanging over the country, the hundreds of mill executives in attendance were not inclined toward frivolity; instead they devoted almost every minute of the convention period to group discussions of the manifold problems with which the industry is faced under present abnormal conditions.

New Officers

At the joint meeting of the Association's Executive Committee and Board of Governors in the Jansen Suite of the Waldorf-Astoria Wednesday morning, February 18, George H. Mead, president of the Mead Corporation, Chillicothe, Ohio, was elected president of the American Paper and Pulp Association for 1942, succeeding John L. Riegel, president of the Riegel Paper Corporation, New York, who served as chief executive of the parent body of the paper manufacturers' organizations for the preceding year. D. K. Brown, president of the Neenah Paper Company, Neenah, Wis., was elected first vice president. The following vice presidents also were elected:

Hugh J. Chisholm, Oxford Paper Company, New York City.

R. J. Cullen, International Paper Company, New York City.

D. C. Everest, Marathon Paper Mills Company, Rothschild, Wis.

P. H. Glatfelter, P. H. Glatfelter Company, Spring Grove, Pa.

James L. Madden, Hollingsworth & Whitney Company, Boston, Mass.

John R. Miller, West Virginia Pulp and Paper Company, New York City.

Cola G. Parker, Kimberly-Clark Corporation, Neenah, Wis.

George H. Mead, newly elected president of the American Paper and Pulp Association.

John L. Riegel, Riegel Paper Corporation, New York City.

Dwight L. Stocker, Michigan Paper Company, Plainwell, Mich.

Norman S. Stone, Mosinee Paper Mills Company, Mosinee, Wis.

Norman W. Wilson, Hammermill Paper Company, Erie, Pa.

J. D. Zellerbach, Crown Zellerbach Corporation, San Francisco, Calif.

E. W. Tinker was re-appointed executive secretary and treasurer of the Association.

Highlighting the convention were addresses by several officials of the Washington war-time Government, who spoke at different group meetings on subjects directly linked with the paper and pulp industry's position in the nation's war economy. Among these speakers were Norbert A. McKenna, chief of the Pulp and Paper Branch of the War Production Board, who spoke before the National Paper Trade Association; John R. Kimberly, supervisor of several WPB industry branches, who spoke at the annual luncheon of the American Paper and Pulp Association; Robert M. Macy, chief of the Paper and Paper Products Section of the Office of Price Administration, who addressed the Association of Pulp Consumers, and also the Specialty Paper and Board Affiliates, and J. F. Strub, chief of the Distribution Unit, Pulp and Paper Branch, OPA; J. L. Ritchie, Machinery Priorities Expert of the Pulp and Paper Branch, WPB; Charles J. Grant, chief of the Writing Paper Unit, Pulp and Paper Branch, OPA; Frank W. Howe, chief of the Wrapping Paper Unit, Pulp and Paper Branch, WPB, and George P. Lee, chief of the Fine Paper Section, WPB, who addressed the National Paper Trade Association.

Other eminent speakers included R. L. Weldon, newly-elected president of the Canadian Pulp and Paper Association, who addressed the annual A.P.P.A. luncheon, and Eugene P. Thomas, president of the National Foreign Trade Council, who spoke at the Salesmen's Association luncheon.

One of the most interesting meetings of the convention was the Priorities Clinic of the American Paper and Pulp Association in the Jansen Suite of the Waldorf on Tuesday afternoon of Convention Week. At this session, John Darrow, Washington representative of the A.P.P.A., asserted that while large-scale shutdowns of plants in the paper manufacturing industry as a result of the war effort are "improbable," many paper mills likely will be forced to curtail operations 10 to 30 per cent below present levels before the end of the current year.

This curtailment, Mr. Darrow said, will be forced by power, transportation and labor shortages, and the fact that production of nonessential paper products will be ordered reduced. He advised manufacturers to analyze their production and where possible to switch from nonessential to essential products. The policy of the War Production Board, he continued, will be to keep all pulp mills running through making available repair and mainte-

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FULL-TIME emergency operations shorten the normal useful life of machinery and equipment. Necessary replacements are frequently unavailable, but essential production MUST continue without interruption.

Industrial CRODON-plating provides new-equipment performance. It avoids the use of scarce metals for *entire* machines or parts. It shortens replacement time and reduces production losses due to worn-out equipment. There is substantial economy in restoring worn parts by industrial chrome plating, as well as a material saving in the consumption of strategic metals. CRODON is useful in rebuilding parts that are undersized due to errors in machining.

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On the first day of the convention, a large number gathered in the Waldorf-Astoria for the annual luncheon of the American Paper and Pulp Association.

nance items. However, all applications for a major piece of equipment will be denied, and no requests for material or machinery to expand production will be granted, he stated.

Mr. Macy, of the Paper and Paper Products Section of the OPA, in his address before the Association of Pulp Consumers, praised the paper and pulp industry for "thus far having met the demands placed upon it, including a lot of inventory accumulation in certain areas."

"Orders taken have fallen off rather sharply in nearly all parts of the industry during the past two months," said Mr. Macy. "Pressure on prices has been reduced. Does this general trend suggest that we should relax and minimize any talk of shortages in the future?

"It is difficult to see how shortages will develop because of increased demand, with perhaps three exceptions. Hysterical consumer buying might result in temporary shortages in certain articles. The opportunities for consumer hoarding are somewhat more restricted, however, than they were 20 years ago because of the great increase in numbers of persons living in small apartments. With reference to purchases by institutions, a policy whereby shipments are not made promptly but are spread over the period covered by advance buying, would tend to prevent a very tight delivery situation from developing.

"Bombings of this country might result in a heavy demand for multiwall paper bags to be used for sandbags. Such a development could cause at least a temporary shortage in the industrial paper field. Orders taken for kraft paper have steadily declined, however, for many weeks, and it is well known that a number of warehouses scattered over the country have large accumulations of grocery bags.

"A few months ago it could have been argued with some merit that Great Britain and South America need all the pulp and paper we can ship them. Today, however, such a large potential demand appears to be fading out of the picture because of the lack of shipping space.

"If shortages do develop, it is suggested that they will be attributable mostly to developments on the supply side as a result largely of extraneous factors."

In an urgent plea to the paper industry to convert all its facilities to production of essential products only,

YES, THAT CONVEYOR IS SHUT DOWN AGAIN— SO WHAT!

"PLENTY," I SAID, "REX HAS THE CURE FOR IT!"

① **"IT'S REX DUROBAR!** Here's a chain belt that's sturdy as a tank—a combination of high carbon steel sidebars and cast block links, ideal for exposed service or, in sliding over unlubricated runways, as on that conveyor of yours."

② **"SEE THAT ECCENTRIC BARREL** on Rex Durobar? Outer faces of both barrels are reinforced by extra metal that keeps the inside of the block link out of contact with the sprockets. This eliminates destructive grinding action."

③ **"SAY, THAT IS SOMETHING,"** he said —with interest. "And you say this is a good chain belt for long, center-to-center distances, too? That's my problem here: if it's the chain belt you say it is, I'd better look into it."

④ **"I THINK YOU SHOULD,** too," I said. "Rex Durobar's background of use throughout plants like yours is extremely wide and I have yet to see an installation of Durobar that didn't justify itself through far lower operating costs."

⑤ **"AND WHILE YOU'RE AT IT,** take a look at this new barking drum chain belt. I think you'll agree that it's one of the most unique conveyor chain belts in the business. It's designed by Rex engineers who grew up with your industry."

⑥ **"DUROBAR AND THIS NEW BARKING** drum chain belt are only two of several special Rex pulp mill chain belts. You can trust them with your most difficult drive and conveyor problems and be sure of coming out on top."

Naturally, these days, the delivery of orders bearing highest priority distinction takes precedence above all others. However, the Rex man will be glad to answer any and all of your inquiries and to let you know of earliest delivery dates. Address 1717 W. Bruce St., Milwaukee, Wis.

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Rex Chain Belt and Conveyor Divisions, Milwaukee, Wisconsin

REX CHAIN BELT COMPANY

Mr. McKenna declared that "if we lose this war we shall be destroyed for centuries to come and we can lose it at the current rate of progress."

Mr. McKenna raised previous estimates of how much this country would spend in its war effort by asserting that our peak rate of expenditures, $70,000,000,000 a year, would be reached in the second quarter of next year. There will be 15,000,000 men employed in the war productiton effort at the end of this year and 30,000,000 at the end of 1943, he said.

Declaring that the war situation is "desperate," Mr. McKenna said that those paper mills not serving war industry or some essential use must convert their facilities and must seek new customers. Paper, he pointed out, is the last resort for many manufacturers who previously used materials now scarce.

Mr. Kimberly, supervisor of industrial and office machinery, pulp, paper, printing and publishing, transportation, farm equipment and communications branches, WPB, at the luncheon meeting of the American Paper and Pulp Association, urged the industry to conserve metals and critical materials in its plant operations. He stated that the industry has co-operated willingly and admirably in the past, but must be even more co-operative in the future.

"Business as Usual" Robertson's Theme

Speaking before the annual luncheon of the A.P.P.A., Reuben R. Robertson, Sr., executive vice president of the Champion Paper and Fibre Company, Canton, N. C., said:

"In the present emergency the maintenance of continuity in paper operations is of very great importance to you and me. In the eyes of the nation, however, we must admit that it does not rank with such vitally important defense needs as tanks, planes, ammunition and ships. We all know that time is running against us in this war and that we must help in every way possible in the quick production of vital defense necessities. We must do not only the things we are asked to do but must go further and seek ways by which we can be helpful. After we have fulfilled our obligation in this particular with generous good measure, then we can with propriety turn back to the needs of our own industry and I see no objection to making "business as usual" our slogan so long as it is always specifically conditioned on war needs taking precedence. We need *Business as Usual* to produce the taxes which must pay for our war effort.

"We need *Business as Usual* to produce payrolls which through lessening the relief rolls leaves more money available for war needs. We need *Business as Usual* to promote civilian morale. Unemployment and business confusion certainly lessen the courage and steadiness of purpose of the civilian population who after all indicate if they do not dictate our national policies.

"Wartime activities necessarily mean the concentration of power in Government. Power to do the things which defense requires and to push aside those things which interfere with defense.

"When defense needs are taken care of all remaining matters so far as practical should be left to the field of private enterprise. This is true for several reasons. Government agencies are already almost overwhelmed with the enormity of the task of creating in a few months defense facilities that other nations have taken years to produce. I believe it just to say that there are people in this country who are eager to see everything possible taken out of the realm of private enterprise and made a governmental responsibility. Some are willing to take advantage of wartime conditions in order to put their theory into effect. These theorists constantly shout that private enterprise has failed and therefore should be replaced. Private enterprise has its faults, of course, but it has not failed any more than democracy has failed because Congressmen and other men in public office pass pension bills, fail to appreciate the real defense needs and let valuable and irreplacable years pass in boondoggling.

"Private enterprise should seize and reserve for itself all opportunities that may come to it for solving the problems of commerce and industry without calling for action by governmental bureaus.

"In the paper industry we are bound to have many problems which can either be handled by the industry itself or by a government bureau. We should in my judgment take and hold the initiative in disposing of these intra-industry problems.

"Many of you remember the days of NRA and the monthly meetings which we used to hold. The NRA had its many faults, of course, but I believe it had much of constructive value to its credit,—many of us had been suspicious and aloof from our competitors—many of us believed that some of them would steal the gold from the teeth of a dying saint—the personal friendly conferences of NRA very shortly allayed suspicion and gave opportunity for constructive effort. It is not necessary today any more than it was then to regard every competitor with doubt and suspicion—some of you may recall the incident that is said to have taken place between Mark Hanna and Joe Cannon—both were hard headed politicians and enthusiastic poker players and played together frequently. On one occasion someone had given Uncle Joe a very beautiful necktie and he had worn it when he went to the poker game with Mark Hanna. Uncle Joe was notoriously generous in the use of chewing tobacco, when he returned from this game, the donor of the tie discovered that it was saturated with tobacco juice and utterly ruined and he asked Uncle Joe how it happened—Uncle Joe replied 'you can't look where you spit when you play poker with Mark Hanna.'

"I'm afraid some of us in the paper industry feel that we can't look where we spit when we deal with our competitors.

"I feel this emergency demands that we call a truce on suspicions and aloofness and that we all think industry-wise and for the maintenance of private enterprise. We should endeavor to alleviate as much as we can the penalties of business derangement which may fall with especial severity on certain members of our industry.

"In all struggles the holding and maintenance of the initiative is of the utmost importance. We have seen what it has meant in France, in Russia, in Libya and in the Far East. Purely defense policies mean the scattering of forces and permit an aggressor to consolidate his forces and dispose of the smaller forces of his opponent one at a time.

"Successful sales, successful industrial relations policies, successful political policies all call for holding the initiative.

"In guarding our industry from effect of interferences, necessary or unnecessary, we should hold the initiative just as much and just as long as possible.

"Our program of co-operation with the Government should include, briefly stated, the following principles:

"1) Do everything in our power to make every second count in production of Defense goods.

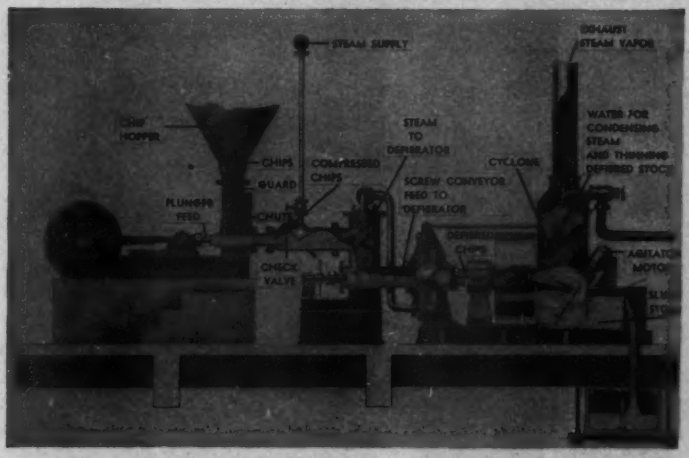
"2) Having done that in generous measure do everything we can to keep business as usual.

"3) Encourage constructive mutual helpfulness within the industry.

"4) Hold the initiative in confidence and in constructive spirit."

The Asplund DEFIBRATOR

AN ADVANCED PROCESS OF DEFIBERING LIGNO-CELLULOSE MATERIALS FOR THE MANUFACTURE OF WALL AND INSULATING BOARD, ROOFING AND FLOORING FELTS, MOLDED WOOD PRODUCTS, PLASTICS, AND FILLERS FOR NEW PRODUCTS



Flofoto of the DEFIBRATOR used for defibering wood chips, showing action from chips to slush stock. (U. S. Patent Numbers: 2,145,851—2,008,892—2,047,170. Canadian Patent Numbers: 337,404—335,302—355,303.) Patented in Foreign Countries.

Typical Defibrator Installation

In the processing of ligno-cellulose materials, the Defibrator has radically changed existing methods of manufacturing certain types of pulps and fibres, heretofore produced mechanically. For example, in the roofing and flooring felt industry, the Asplund pulp is an excellent substitute for rags. Other uses are: as bulk insulating materials and low density board, with maximum yield about 96%. Practically all ligno-cellulose raw material of vegetable origin can be defibrated, such as different woods, straw, bagasse, bamboo, etc., and progress is being made in the use of the Defibrator for the manufacture of plastics, and fillers for many new products.

The remarkable results attained by users in many industries (over 210 Defibrators in successful operation) have proved the outstanding advantages of this defibrating process, especially in the improvement of product quality and considerable reduction of production costs.

Now applied to manufacture of Pulps for CONTAINER BOARD, NINE POINT, etc.

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TAPPI *in Wartime Meeting*

▶▶▶ THE 27TH ANNUAL MEETING of the Technical Association of the Pulp and Paper Industry was held on February 16 to 19, 1942, inclusive, at Hotel Commodore, New York. This convention witnessed the largest registration in the history of the Association—surely a compliment to the place of the Association in the affairs of the industry, and a source of inspiration to members and guests alike who were privileged to attend. In fact, if the pulse of the four-day session could be epitomized in but a single thought, probably no words would do it better than those of Emerson who wrote, "On bravely through the sunshine and the showers! Time hath his work to do, and we have ours."

The Job Ahead for TAPPI

From the opening session of the first day to the close of the meeting on the fourth day there was more than the usual air of seriousness, earnestness, and fact-seeking inquisitiveness than is common to conventions of this kind, important as they always are. Not only was this feeling common to the formal sessions but to the conversations which took place between the numerous informal small groups that gathered outside the meeting rooms to renew old friendships, to make new ones, and perhaps, in some instances, to just talk shop.

Probably, the first spark to be struck, denoting the very character of the convention, was contained in the President's address, presented by W. H. Swanson, retiring president, before a general session which opened the meeting. In his remarks, Mr. Swanson stated, in part:

"Our nation is now at war, and its nature is such that we must play it for keeps. As we all see it there can be no compromise as to its outcome. We must and will win, and I hope in the act of winning demonstrate for all time that the possession of power by one nation or one group of nations does not justify the assumption that it or they possess a superior intelligence and are therefore destined to determine the future outlook for the whole world.

"It is obvious to all of us, now, that there is immediately ahead of us only one job and that is the winning of the war. Each and every one of us, in the way which we as individuals can best do so, must bend all our efforts in that direction. So, also, must our Association and our industry constantly keep abreast of the needs of our country, which we can supply and to which we can adjust our policies continuously so as to best meet these needs."

Then, in a most stirring and enthusiastic address, Sir Herbert Gepp, managing director, Australian Paper Mills, guest speaker at the annual luncheon, the concluding session of meeting, carried through on this same theme. "Victory," he said, "can and will be achieved but only if we all work harder and are more united and wholehearted in our thoughts and work." He also related, as pointed out by Winston Churchill, that this war is mainly a conflict of strategy, organization, technical apparatus, science, mechanics, and morale.

R. A. Hayward, who was elected president of the Technical Association of the Pulp and Paper Industry.

Election of Officers

For some years now, officers of the Association have been elected by letter ballot in advance of the annual meeting. The officers elected in this manner in advance of the 27th Annual Meeting, announced during the general session of the first day, were as follows:

President — Ralph A. Hayward, president, Kalamazoo Vegetable Parchment Company, Parchment (Kalamazoo), Mich.

Vice President—Vance P. Edwardes, sulphite superintendent, International Paper Company, Palmer, N. Y.

Executive Committee (elected to serve for three years)—W. E. Brawn, general superintendent, Pejepscot Paper Company, Brunswick, Maine; O. P. Gephart, superintendent, Miamisburg Paper Company, Miamisburg, Ohio; C. R. Seaborne, vice president and treasurer, Thilmany Pulp and Paper Company, Kaukauna, Wisconsin; R. S. Wertheimer, vice president and resident manager, Longview Fibre Company, Longview, Washington.

Record of 1941

In the report of R. G. Macdonald, secretary-treasurer, it was related that, as of December 31, 1941, the individual membership in the Association totaled 1867, the corporate membership 87, and the sustaining membership 91; that the Association lost through death the following members: A. A. Bush, R. A. Colby, Eugene L. Connolly, C. J. Enemark, H. R. Harrigan, C. C. Hockley, W. S. Hodges, W. J. Lawrence, A. A. Macdiarmid, G. A. Macklem, P. Sandwell, and Albert F. Williams; and that attendance at the fall meeting of the Association, held at Ann Arbor, Michigan, on September 16-19, 1941, approximated 550. Mr. Macdonald also mentioned that the 1942 fall meeting will probably be held at Boston, Massachusetts, late in September.

In addition, Mr. Macdonald commented that an official grant of $800 was made to the Materials of Construction Committee for Project 20, which was an investigation of packings problems in sulphate pulp mills and an experience-survey of sulphate pulp mills in regard to materials used for process piping and tubing.

Other activities of the Association that came in for consideration in the report of Mr. Macdonald were: special reports on manufacturing problems, employment, publications, local sections, national defense, and divisions and committees. Although the Technical Association as an organization has not been called upon to work directly with the Government agencies such as the OPM and the OPA, he related, it has co-operated with the American Paper and Pulp Association and other associations. Members of the staff, he added, have assisted the special committees in their work dealing with priorities and individual

The Most Practical BOOK Ever Offered to American Papermakers!

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MODERN PULP *and* PAPER MAKING

by G. S. Witham, Sr.

Witham—master papermaker—devoted a large part of the best years of his life writing this valuable book . . . to help young men striving to progress in the paper industry. Starting at the bottom and working to the top, the author proved his mettle with numerous valuable inventions and highly responsible positions—interestingly explained in this enlightening treatise.

The successful first edition of his book was notable for two things: First it dealt with the paper industry as actually practiced *in America*, giving the greatest emphasis to wood as a raw material. Secondly, he explained the simple everyday matters involved in the operation of an efficient pulp and paper mill. Suitable for even the most learned technologists, the book was written to be of real help to machine tenders, beater men and other practical workers in the pulp and paper industry.

At the time of his death the second edition was almost entirely complete. Owing to his having acted as consultant to a number of important mills in the South and West since the preparation of his original volume, Mr. Witham's own experience had broadened. Shortly before his death he was honored by the Superintendents' Association as the Dean of American Papermakers. Right up to the time of his death he was carrying on a vast correspondence with paper experts throughout the country. All these activities are reflected in the new edition of his book. Mr. G. S. Witham, Jr. (himself a notable paper expert) and friends in the industry collaborated in completing the preparation of Mr Witham's manuscript for the printers.

Special features of the revised edition include:—new methods of wood preparation peculiar to the Pacific Coast and the South; new cooking processes, modifications of the sulphite process, forced circulation, etc.; new developments in recovery processes; improvements in paper machine design, and criticism of these developments based on the author's own experience; recent improvements in ground-wood manufacture; automatic control; new types of equipment—refiners, screens, thickeners, special bleaching equipment, continuous rotary filters and other things new to the industry since the publication of his first book; thorough checking and modernization of all figures as to power consumption, capacity, etc.; and great attention to new acid-resisting materials such as Monel metal, stainless steel, chromium plate, rubber linings, etc.

An entire chapter has been added on converting and coating; the chapter on the finishing room has been greatly amplified based on the author's activities in his later years. There is much added material on tissues, glassine, boards and other specialties. The chapter on bleaching has been greatly enlarged and amply covers modern practice. At the same time all the notable features of the original book have been conserved and strengthened.

CONTENTS

Historical Note • Processes by Which Pulp is Produced • Materials from Which Pulp is Produced • Varieties of Paper • The Saw Mill • The Wood Room • The Sulphite Mill • The Acid Plant • The Alkaline Processes • The Groundwood Mill • Screening and Refining of Pulp • Bleaching • The Beater Room • The Machine Room • The Finishing Room Converting and Coating • Paper Defects: Their Cause and Cure • General Design of Pulp and Paper Plants • Personnel and Records • The Power Plant • Paper Testing • Index

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The TAPPI luncheon in the ballroom of the Commodore Hotel on Thursday, the last day of the convention.

members of the association have devoted considerable time to special committee work.

Program of Technical Papers

The program of the meeting included the presentation of approximately 90 technical papers. With the exception of only three papers which were presented before the general session, all papers were presented before group sessions for greater specific appeal and helpfulness to the individual.

On the afternoon of the first day, there were three group sessions: namely, Water, Acid Pulping, and Chemical Methods of Testing.

Six group sessions were held on both the second and third days of the meeting, three each morning and afternoon. The group sessions of the second day included Alkaline Pulping, Graphic Arts, Preparation of Non-fibrous Materials and Coating, Optical Properties and Graphic Arts, Forming and Finishing and Stuff Preparation, and Fundamental Research. Those of the third day were: Heat and Power, Stuff Preparation, Container, Materials of Construction, Pulp Purification, and Mechanical.

The program of the last morning of the meeting also included three group sessions; one on Fundamental Research, another on Bacterial Control, and a third on Engineering Research.

Chairmen of the various sessions, as well as titles of the various papers and their respective authors, are given in the accompanying partial reproduction of the program of the meeting.

College Alumni Reunions

What has long since become a regular affair at the annual meeting of TAPPI is the individual getting-together of several college alumni groups for good fellowship; for the older "grads" to meet the newcomers, and vice versa, and to learn of the activities of the alma mater since the meeting a year ago. This year, there were three such reunions: one of the Massachusetts Institute of Technology alumni, another of graduates of the New York State College of Forestry, and a third of graduates of the University of Maine. Each of these reunions was in the form of a luncheon, the M.I.T. group meeting at the M.I.T. Club on the second day of the convention; the New York State College of Forestry group meeting at Hotel Commodore, also on the second

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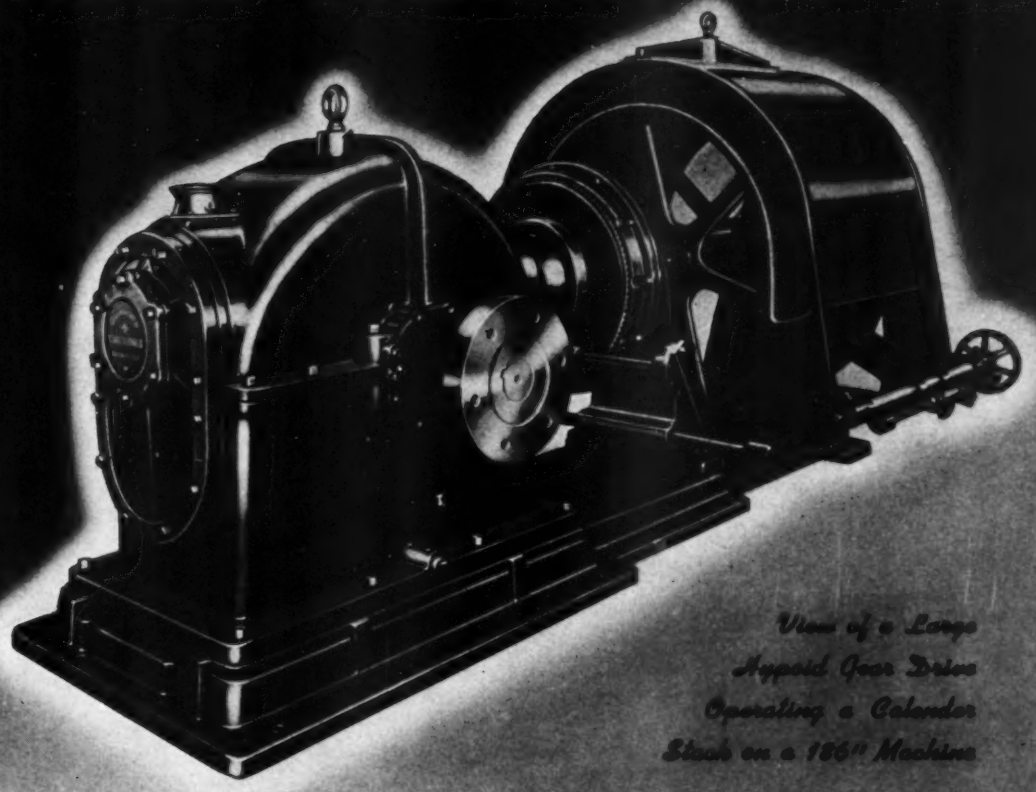

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MODERN types of enclosed all-metal driving units have become so universally accepted by progressive paper mills that serious consideration should be given to replacement of old type drives. The design and construction of these modern units provide for extremely low maintenance cost, and make possible a steadier running machine.

Accurately cut special bevel or hypoid gears, mounted on shafts supported by anti-friction bearings deliver a steady, positive power with a minimum of power loss due to friction and improperly operating gears.

Reports from numerous installations have indicated that in addition to reduced operating costs, it has been possible in many cases to actually increase production due to a smoother running condition on the paper machine.

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PROGRAM

27th ANNUAL MEETING

OF THE

TECHNICAL ASSOCIATION

OF THE

PULP AND PAPER INDUSTRY

Annual Luncheon — Ball Room
Thursday, February 19 at 1:00 P. M.

Speaker
Sir Herbert Gepp, Managing Director
Australian Paper Mills
"What Is the Future of Economic Man"

FEBRUARY 16 TO 19, 1942
HOTEL COMMODORE
NEW YORK

WEAR YOUR BADGE

PROGRAM

MONDAY, FEBRUARY 16, 1942

9:30 A. M. GENERAL SESSION (East Ball Room)
W. H. Swanson, Chairman
Secretary's Report by R. G. Macdonald
President's Address by W. H. Swanson
Business Session

1. *The Electron Microscope and Its Application to the Pulp, Paper, and Paperboard Industry* by O. K. Sears and E. A. Kirgis.
2. *Trends in Non-ferrous Raw Materials for the Paper Industry* by E. B. Pusey.
3. *The War Production Board and the Paper Industry* by John F. Darrow.

2:00 P. M. WASTE STREAMS (East Ball Room)
L. B. Miller, Chairman

1. *Water Treatment for the Pulp and Paper Industry* by W. R. Glenn.
2. *The Sprucetor Lime-Soda Water Softener* by Howard L. Tiger and Martin E. Gilmore.
3. *Chemical Character of Water Available for Pulp and Paper Manufacture in the U. S. A.* by W. D. Collins.
4. *Calcium Bicarbonate Removal from Water Benefits Sulphate Mills* by H. W. Fraser.
5. *Filtration Treatment of White Water* by E. H. Peer and H. A. Wheelabrator.
6. *The Jamesbury Water Collector* by J. F. Rhodes (by title).

2:00 P. M. ACID PULPING SESSION (Room B-C)
M. F. Dallois, Chairman

1. *A Further Comparison of Sodium- and Calcium-Base Sulphite Acids* by M. G. Schur and R. E. Baker.

2. *Report on TAPPI Chip Packing Survey* by Vernon Edwardes.
3. *Control of Direct Heated Sulphite Digesters* by J. F. Isaksen.

2:00 P. M. CHEMICAL METHODS OF TESTING SESSION (West Ball Room)
J. Clark and E. D. Rich, Chairmen

1. *Manufacturing Data Relative to the Determination of Cellulose and Wood for the Extraction of Cellulose* by Philip Thomas, E. C. Jahn and L. E. Wise.
2. *Cupri-Ethylene Diamine as a Solvent for Cellulose Fractionation* by F. L. Seltzer and R. M. Lary.
3. *Discussion of Viscosity Measurements and Other Chemical Methods:*
   a. *A Comparison of the Capillary Flow and Falling Sphere Methods of Determining the Viscosity of Cellulose in Cuprammonium Solutions* by R. S. Hatch, R. W. Hammond, and J. J. McNair.
   b. *The Influence of Elemental and Active Oxygen on the Basic Viscosity Measurement of Cellulose* by Emil Schaller (translation by E. A. Weber and E. D. Rich.
4. *Cross Sectioning of Paper* by J. H. Graff and M. A. Schleuter.

TUESDAY, FEBRUARY 17, 1942

9:30 A. M. ALKALINE PULPING SESSION (Room B-C)
Fred Hodges, Chairman

1. *Kraft Mill Waste Water Disposal Problem* by Karl Thorsen and S. D. Hedberg.
2. *The Colored Materials of Alkaline Cooking Liquors* by G. C. Kimble (by title).
3. *Causticizing, Reburning, and Settling in Salphate Lime Recovery* by C. B. Hughey, L. K. Herndon, and James Withrow.

4. *Use of Gypsum and Soda Ash as Substitutes for Salt Cake in the Kraft Recovery System* by T. T. Collins, H. J. Thea and E. Wilsey (by title).
5. *The Use of Alkalyzer in the Analysis of Sulphate Liquors for Total Alkali* by E. Mellvon (by title).

9:30 A. M. CALENDER ASSN. SESSION (East Ball Room)
M. S. Kantrowitz, Chairman

1. *Status of the Printing Industry* by A. F. Gessler.
2. *Paper Characteristics versus Ink Coverage* by George Creamer.
3. *Testing Methods for Evaluating the Printing Qualities of Paper* by W. F. Talbot.
4. *Testing Printability of Paper with Ash* by F. A. Weymouth.
5. *What is Tack?* by Henry Green

9:30 A. M. PREPARATION OF NONFIBROUS MATERIALS AND COATING SPEEDS (West Ball Room)
C. M. Conner and J. D. Davis, Chairmen

1. *Structural Viscosity Computations* by C. H. Sherts.
2. *The Colloidal Properties of Aqueous Dispersion of Fillers* by S. W. Martin.
3. *Alum Substitutes* by H. Y. Thaston
4. *Starch for the Papermaker* by J. P. Casey and W. C. Black.
5. *A Precipitated Starch Product* by C. C. Kesler
6. *The Advantages of Sulphonated Tall Oil in Manufacturing Coated Paper* by Edmund Gotty (by title)

2:00 P. M. OPTICAL PROPERTIES AND GRAPHIC ARTS SESSION (Room B-C)
M. S. Kantrowitz, Chairman

1. *The Influence of Certain Variables in Forming Brightness Handsheets* by C. M. Conn and D. D. Mowrey

2. *Conditions Required for the Calculation of Brightness from Spectrophotometric Data* by M. N. Davis (by title).
3. *A Correlation between the Bausch & Lomb, Wratten&Wainwright, Blanchard, and Sanborn Opacimeters* by E. D. Rich and H. D. Lang (by title).
4. *The Physical Basis of Standardization of Brightness Measurements* by J. A. Van den Akker, Philip Nolan and W. A. Wink.
5. *Multiple Specimen Normals Reflectometer* by J. A. Van den Akker, Carleton Ives, and W. A. Wink.
6. *Physico-Chemical Problems in Newsprint Printing* by S. Strobeck.

2:00 P. M. PUNCHING AND PERFORATING AND STUFF PREPARATION SESSION (East Ball Room)
A. E. Barkhouse, Chairman

1. *Tear Sidedness of Colored Paper* by Otto Kress and E. J. Lougheed.
2. *The Function of the Yankee Drier in the Paper Machine* by Kurt Wendel.
3. *Paperboard Defects and Some Remedies* by Pierce Drowne.
4. *Discussion of Plush Problems.*

2:00 P. M. FUNDAMENTAL RESEARCH SESSION (West Ball Room)
H. F. Lewis, Chairman

1. *Ten Years of Fundamental Research* by H. F. Lewis.
2. *A New Method for Measuring Specific Surface* by J. d'A. Clark.
3. *Measurement and Influence of Fiber Length* by J. d'A. Clark.
4. *The Colloidal and Physical Phenomena relating to Freeness and Stock Drainage* by R. W. Reed.
5. *Optical Characteristics of Paper as a Function of Fiber Classification* by S. R. Parsons.

WEDNESDAY, FEBRUARY 18, 1942

9:30 A. M. HEAT AND POWER SESSION (West Ball Room)
Roderick O'Donohoe, Chairman

1. *Lighting for Improved Plant Efficiency and Safety* by A. K. Gottjens.
2. *Application of Radiant Heat to Industry* by J. D. Hall.
3. *Fuels and Their Application* by E. F. Burns.
4. *Drying Rates for Fourdrinier Kraft Paperboard* by A. E. Montgomery.
5. *Steam Saved by Better Water Removal at the Presses* by W. G. MacNaughton.
6. *Modern Trends in Combustion Control* by M. J. Bohn.

9:30 A. M. STUFF PREPARATION SESSION (East Ball Room)
W. D. Harrison, Chairman

1. *Stone Collection Problems and Quality for Industrial Use* by E. C. Lathrop and J. H. Shellenberger.
2. *Deflecting of Kraft Screenings* by C. K. Textor.
3. *The Chemiplyer* by J. R. Beveridge.
4. *Tubular Determination of Paper Machine Hourly Production* by Edward W. Jones.

9:30 A. M. CONTAINER SESSION (Room B-C)
J. D. Mahoney, Chairman

1. *Sewed Closures for Paper Bags* by J. S. Simpson, G. R. Pecke and A. W. Koon.
2. *The Chemical Industries as Potential Users of Paper Containers* by R. W. Lahey.
3. *Testing of Greaseproof Papers* by E. A. Georgi and Philip Nolan
4. *A Ply-Bonding Strength Test for Papers and Paperboards* by J. F. Holladay and A. T. Lacy

2:00 P. M. MATERIALS OF CONSTRUCTION SESSION (Room B-C)
J. A. Lee, Chairman

1. *The Reliability of Thermal Insulation in Mill Efficiency* by R. C. Parker.
2. *Sprayed Metals for Maintenance* by W. B. Coxon.
3. *Materials Priorities* by J. Ritchie.
4. *Physical and Chemical Properties of Synthetic Rubber* by Dr. H. H. Harbeck.

2:00 P. M. PULP PURIFICATION SESSION (East Ball Room)
D. T. Jackson and T. W. Toovey, Chairmen

PART I.—GENERAL

1. *Some Fundamental Considerations about Alkaline Purification of Cellulose* by G. Goldfinger and H. Mark.
2. *Procedures and Brightness Grades in Bleaching Sulphate Pulps* by J. D. Rue and S. G. Nagel.
3. *Bleaching of Groundwood Sulphate* by J. D. Rue and S. G. Nagel.
4. *A Study of the pH Factor in the Hypochlorite Bleaching of Wood Pulp—Single Stage Treatment of Sulphite Pulp* by P. Casciani and G. K. Stavin.
5. *Multistage Bleaching of Kraft Pulp* by S. D. Wells and F. B. Schellhorn (by title).

PART II.—METHODS OF REDUCING CHLORINE CONSUMPTION

1. *Methods of Automatically Controlling the Chlorine Supply in Bleaching* by G. A. Petrie and R. R. Fuller.
2. *Some Economies in Chlorine Consumption in Bleaching Chemical Wood Pulp* by J. D. Rue and S. G. Nagel.
3. *A Discussion of Various Methods Which Have Been Suggested for Reducing Chlorine Consumption in Pulp Bleaching* by T. W. Toovey.

2:00 P. M. MECHANICAL SESSION (West Ball Room)
K. F. Heuter, Chairman

1. *Development of Wood Stones and Pulpwood Supplies from the Pisus Mercoat of Northern Sweden* by D. G. Moon.
2. *Round Table Discussion on the Use of Groundwood in the War Production Program.*
   a. *Use of Groundwood Papers* by Peter J. Macrory.
   b. *Technical Developments in the Use of Groundwood* by Lyman Bonnell.

THURSDAY, FEBRUARY 19, 1942

9:30 A. M. FUNDAMENTAL RESEARCH SESSION (Oak Room)
H. F. Lewis, Chairman

1. *The Behavior of Some Lignin Preparations in the Molecular Still* by J. F. Hutchinson.
2. *Lignins Isolated in the Presence of Butanol* by H. V. Charbonnier.
3. *The Solution of Lignin Content to the Strength of Paper and Boards* by E. C. John.
4. *Estimation of the Dialdehyde Type of Oxidation in Periodate Oxycelluloses and Oxycelluloses* by D. H. Grangaard, E. K. Gladding and C. B. Purves.

9:30 A. M. BACTERIAL CONTROL SESSION (Room B-C)
Allen Abrams, Chairman

1. *Effect of Mill Operations on the Number of Bacteria Found in Paper Products* by J. R. Sanborn.
2. *The Lethal Effect of Drier Rolls upon Bacteria* by J. W. Appleby and R. F. Shemin.
3. *Microbiological Deposits and Bacteriological Corrosion* by A. E. Griffin.

9:30 A. M. ENGINEERING RESEARCH SESSION (West Ball Room)
R. B. Wilcox, Chairman

2. *Heat Transfer Characteristics of an Indirectly Heated Digester* by J. G. L. Jones and G. L. Hyatson, Jr.
3. *A Correlation of Pressure Drop Data Applied to Pulp Suspensions* by James Cooper Jr.
4. *The Flow of Pulp Slurries Over Weirs* by R. P. Whitney and J. D. McNitt.
5. *Electrostatic Thickening in Alkaline Pulping* by G. J. Crocker, L. A. Doe, W. F. Rignell, and W. J. Nolan.

1:00 P. M. ANNUAL LUNCHEON (Grand Ball Room)
W. H. Swanson, Chairman

1. *What is the Future of Economic Man* by Sir Herbert Gepp, Managing Director, Australian Paper Mills.
2. *TAPPI Medal Award*
   Presented by R. A. Hayward, Kalamazoo Vegetable Parchment Company.
   Received by Robert B. Wolf, Pulp Division, Weyerhaeuser Timber Company.

Production . . .

Day and night BWH is producing mechanical rubber goods. Thru our distributors many of these products reach factories running largely on defense work — as well as army cantonments, naval stations and Government flying fields.

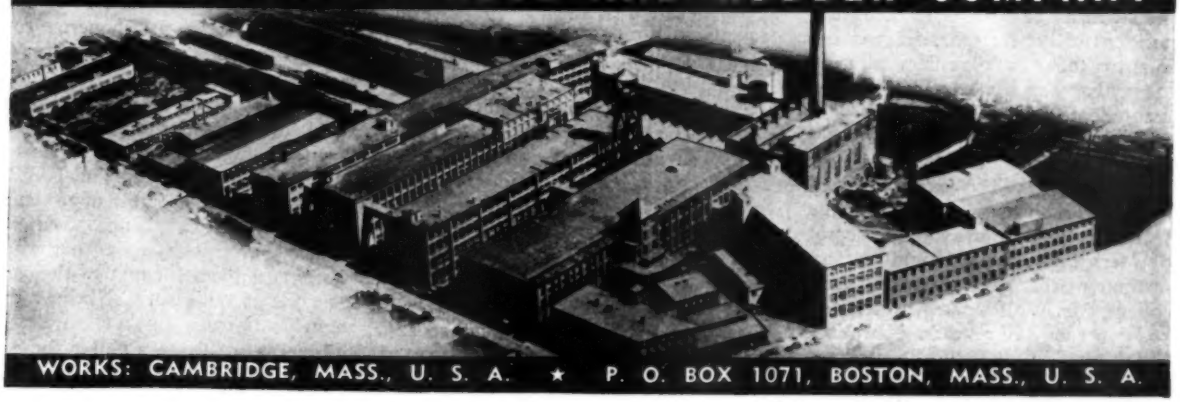
Because of national defense requirements our stock of mechanical rubber goods may not be as complete as in normal times. Faced with emergency demands, we naturally cannot replenish our stock as promptly as formerly.

We ask our customers to bear with us and to be confident that we are trying in every conceivable way to produce their requirements as rapidly as possible.

We naturally regret losing business as much as you do . . . because volume business means ideal operating conditions . . . and because we consider our customers as our most valuable assets.

Production battles are not won by factories or machines alone. They are won by morale . . . by the courage and spirit of both workers and management to get things done. Customers' morale helps, too.

BOSTON WOVEN HOSE AND RUBBER COMPANY



WORKS: CAMBRIDGE, MASS., U. S. A. ★ P. O. BOX 1071, BOSTON, MASS., U. S. A.

day; and the Maine group meeting at Hotel Commodore on the third day. It goes without saying that these meetings enliven the alumni spirit and weld their respective groups into closer camaraderie.

TAPPI Award Presentation

The program of the 27th Annual Meeting of TAPPI was brought to a close with the presentation of the TAPPI Medal Award to Robert B. Wolf, Pulp Division, Weyerhaeuser Timber Company.

R. A. Hayward of the Kalamazoo Vegetable Parchment Company, and president-elect of the Association, made the presentation, and, while so doing, related that technical progress may be accomplished in several ways: (1) by direct research and invention, contributing either new process, methods, or machinery to the industry; (2) by contributing to the available literature in one form or another which, in turn, assists others to improve their knowledge of the industry; (3) by new and improved management methods that improve the relationships existing within the industry and that stimulates the creative thinking power on the part of the people in the industry; (4) by sponsoring and promoting scientific study and research and assisting in providing the means by which this work is carried on; and (5) by giving opportunity and responsibility to young men and then advising them and teaching them so that they in turn may make their contribution to the industry.

Mr. Hayward added that Robert B. Wolf has contributed to the technical progress of the industry by all of these means, his contributions in any one field being sufficient to justify the recognition being given him.

In continuing his remarks, Mr. Hayward mentioned that he personally represented one of the many men who first started in the industry with Mr. Wolf, and, as a representative of this group, many of whom are occupying positions of great responsibility in the industry today, it gave him pleasure to publicly acknowledge a debt of gratitude to Mr. Wolf for his help and assistance.

Touching briefly upon the career of Mr. Wolf, Mr. Hayward recounted that Mr. Wolf is a graduate of the University of Delaware with the degree of Mechanical Engineering from this institution; that after graduating from college, Mr. Wolf worked in the pulp and paper mills of northern New York and New England; that he designed and supervised the building of the pulp mill of the Union Bag & Paper Company at Hudson Falls and later assumed the responsibility for its operation; and that he later was manager of manufacturing for the Burgess Sulphite Fibre Company, Berlin, New Hampshire. While with the Burgess Sulphite Fibre Company, Mr. Hayward continued, Mr. Wolf developed scientific methods of manufacture and means of evaluating qualitative and quantitative manufacturing variables in the manufacturing process.

R. B. Wolf, TAPPI medallist.

In 1917, said Mr. Hayward, Mr. Wolf became manager of the mills of the Spanish River Pulp and Paper Company in Ontario, Canada; and then, during the first World War, was staff assistant to the director general of the United States Emergency Fleet Corporation. Continuing his remarks, Mr. Hayward related that, at the conclusion of the war, Mr. Wolf entered into the consulting engineering business in New York City, supplying the pulp, paper and paperboard industry with improved equipment and process; and that previous to this time Mr. Wolf had been granted many patents covering various aspects of pulp manufacture, particularly in the line of acid making, sulphur dioxide recovery, and special equipment for cooking.

Mr. Hayward further stated that Mr. Wolf was a pioneer in the use of strong acid in the pulp manufacturing process, in the bleaching of pulp at high consistency, and in the development of cost accounting methods in the industry.

It also was brought out by Mr. Hayward that Mr. Wolf is the author of many technical articles on labor, management, and other scientific subjects; that he was one of the original group that organized the Technical Association and at one time served as vice president of the organization; and that he has served on the board of directors of the American Society of Mechanical Engineers and now holds a fellowship in that society.

In recognition of the many valuable contributions that Mr. Wolf has made to the technical progress of the industry, said Mr. Hayward in concluding his remarks, it gives me a great deal of pleasure to present to him, on behalf of the Technical Association of the Pulp and Paper Industry, the TAPPI Gold Medal Award.

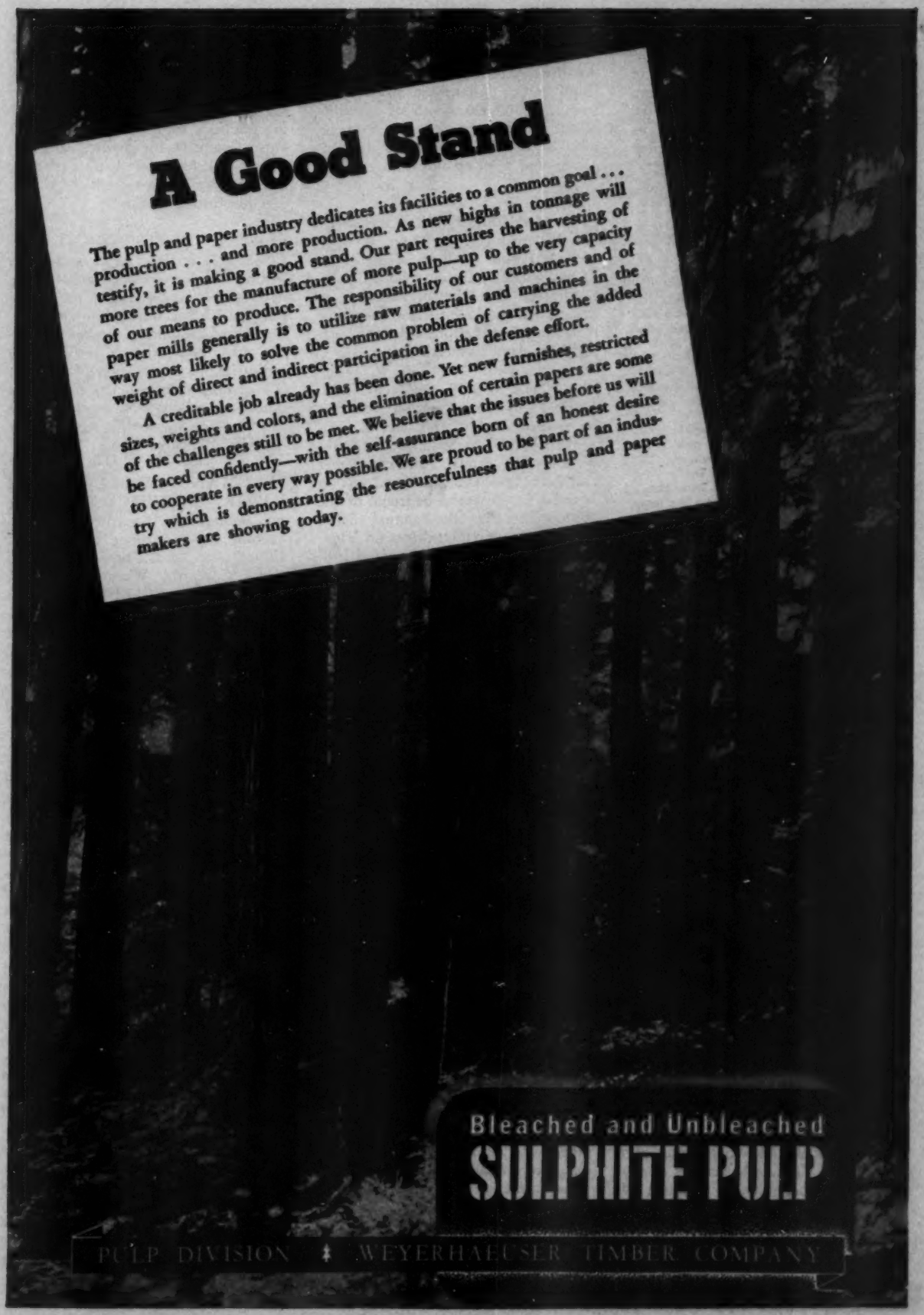
Mr. Wolf briefly and graciously expressed his appreciation for the honor which TAPPI had bestowed upon him and then presented a most fundamental and thought-provoking dissertation on "Suggestions for a Scientific Approach to the Study of Human Nature." Early in his remarks, Mr. Wolf quoted from the essay "Science and Education," written by Thomas H. Huxley in 1898: "Education is the instruction of the intellect in the laws of nature, under which name I include not merely things and their forces but men and their ways."

Recent discoveries of science, continued Mr. Wolf, tend to show that evolution is not so much a continuous as it is a step-like process. At certain definite and highly significant periods in the process, he added, there seems to be a change of direction, this change being invariably preceded by a period of disintegration as a necessary step to provide the substance out of which the units in the succeeding period or stage may be formed.

After sketching the development of the evolutionary process through the mineral, vegetable and animal kingdoms, Mr. Wolf related that Christianity, because it is in harmony with the indicated change of direction, is under attack from the powerful cults of materialism the world over. Only a determined, consistent and enthusiastic all-out fight against dishonesty, corruption and brutality, he said, will win this war.

Then in a most dramatic closing, Mr. Wolf brought the present world situation right home to everyone in his audience by saying: "Men of TAPPI, we are faced with a great opportunity and a tremendous challenge. Will we arise to the occasion, doing our work fearlessly without thought of the consequences to ourselves? I believe the answer is, Yes."

These remarks recall the famous poem of Henry Wadsworth Longfel-


A Good Stand
The pulp and paper industry dedicates its facilities to a common goal . . . production . . . and more production. As new highs in tonnage will testify, it is making a good stand. Our part requires the harvesting of more trees for the manufacture of more pulp—up to the very capacity of our means to produce. The responsibility of our customers and of paper mills generally is to utilize raw materials and machines in the way most likely to solve the common problem of carrying the added weight of direct and indirect participation in the defense effort.
A creditable job already has been done. Yet new furnishes, restricted sizes, weights and colors, and the elimination of certain papers are some of the challenges still to be met. We believe that the issues before us will be faced confidently—with the self-assurance born of an honest desire to cooperate in every way possible. We are proud to be part of an industry which is demonstrating the resourcefulness that pulp and paper makers are showing today.
Bleached and Unbleached
SULPHITE PULP
PULP DIVISION ‡ WEYERHAEUSER TIMBER COMPANY

low entitled "The Building of the Ship." A portion of this poem is being reproduced herewith as a finis to this report of the 27th annual meeting of the Technical Association of the Pulp and Paper Industry because its message could never have been more timely than now.

The Building of the Ship

Thou, too, sail on, O Ship of state!
Sail on, O Union, strong and great!
Humanity with all its fears,
With all the hopes of future years,
Is hanging breathless on thy fate!
We know what Master laid thy keel,
What Workmen wrought thy ribs of steel,
Who made each mast, and sail, and rope,
What anvils rang, what hammers beat,
In what a forge and what a heat
Were shaped the anchors of thy hope!
Fear not each sudden sound and shock,
'Tis of the wave and not the rock;
'Tis but the flapping of the sail,
And not a rent made by the gale!
In spite of rock and tempest's roar,
In spite of false lights on the shore,
Sail on, nor fear to breast the sea!
Our hearts, our hopes, are all with thee,
Our hearts, our hopes, our prayers, our tears,
Our faith triumphant o'er our fears,
Are all with thee,—are all with thee!

—*Henry Wadsworth Longfellow*

SIDELIGHTS

▶▶▶ THAT A PROMOTION IS IN LINE FOR Capt. C. M. Borz, of the Quartermaster General's office, who attended many of the convention gatherings was one of the bits of unofficial news heard at the convention. Capt. Borz is an important cog in the Army system involving purchases of paper. It is said by those who have watched the fine work being done by Lieut. Robert B. Hamilton of the Jersey City Quartermaster Depot that he also will be recognized without too long a delay. Another paper man now in the Army, Maj. Leslie Carpenter, who attended the convention to meet old friends, is scheduled for a higher commission in the Quartermaster Corps shortly.

▶▶▶ THE EXECUTIVE COMMITTEE and Board of Governors of the American Paper and Pulp Association tendered a surprise dinner in honor of Retiring President John L. Riegel in the Jansen Suite of the Waldorf-Astoria Wednesday evening. More than 20 members and guests were in attendance at the dinner which was strictly formal. Mr. Riegel was presented with a beautiful desk set in recognition of his work as president of the Association.

▶▶▶ PUBLIC PRINTER of the United States and a consumer of paper of no mean proportions, A. E. Giegengack, attended the convention and was present at the Paper Club dinner Wednesday night. Mr. Giegengack said that the production of the Government Printing Office has been stepped up from $18,000,000 worth of printing a year to approximately $50,000,000, part of which is produced by the commercial printing and lithographing industry.

▶▶▶ MEMBERS OF the Paper Makers Advertising Association at their annual session voted to subscribe to $1,000 worth of Defense Bonds, positive proof that the organization is determined to do its share in aiding the country's war effort, a theme which ran throughout its meeting.

▶▶▶ THE FOUR BIG SOCIAL EVENTS of the convention were one on each of the first four days of Convention Week—three luncheons and a dinner. The annual American Paper and Pulp Association luncheon was on Monday in the grand ballroom of the Waldorf-Astoria, the annual Salesmen's Association luncheon on Tuesday, also in the Waldorf's grand ballroom, the annual dinner and frolic of the Paper Club of New York Wednesday night, again in the grand ballroom of the Waldorf, and the annual Technical Association luncheon on Thursday in the Hotel Commodore.

▶▶▶ THAT THE ARMY WILL TAKE many of the present business men now on duty with the various sections of the War Production Board is a current report. Walter C. Shorter, who has had one of the most important key positions in the OPM has already been called to active duty as a lieutenant colonel in the Quartermaster Corps, to act as liaison officer between the Quartermaster General's office and the War Production Board. The International Paper Company man was formerly a captain in field artillery, had experience in World War I and is a graduate of Virginia Military Institute.

▶▶▶ SEVERAL PAPER TRADE ASSOCIATIONS are investing their reserve funds in United States Defense bonds. Among others, the Paper Makers Advertising Association invested $1,000 in this manner, and others are said to have taken the same step, though without public announcement of the amounts so invested.

▶▶▶ HOW TO GET PULPWOOD from the forests has been a major problem with most of the paper mills, because of the danger of inability to replace tires used on trucks engaged in such hauling. While material relief has been granted by the Washington authorities, various companies are seeking every possible means of conserving the truck tires now in use. M & O Paper Company, for instance, will substitute rail haul for half a million truck miles in pulpwood haulage during this cutting season.

▶▶▶ IN THE TECHNICAL DISCUSSIONS in the TAPPI convention lobby there has emerged an amazing development in the use of paper and pulp mill waste material for the production of an infinite number of plastics, many of which may revolutionize industrial practices. Many of the plastics may have little practical use, but others are undoubtedly due to become important factors in the war effort of the United States.

▶▶▶ MANY WELL-KNOWN PAPER MANUFACTURERS were not among those present during convention week. Among others, R. J. Cullen, president of International Paper Company, Ward R. Howard, vice president of the Howard Paper Company, John R. Miller, vice president of West Virginia Pulp & Paper Company, and Norman W. Wilson, president of Hammermill Paper Company, were among those who for various reasons were unable to attend the Waldorf meetings.

▶▶▶ THAT THE PRICE CLUB of the new federal law will only be used when voluntary agreements to maintain prices at present or recent levels are not effective was the keynote of the talks delivered by various representatives of OPA. When groups make voluntary agreements to avoid price spiraling, the rigid application of an ordered price ceiling will be avoided. However, if recalcitrant mills refuse to join others making similar grades in keeping a brake on prices, the law will be used to apply forced adherence to whatever prices the Washington officials think should be maintained. The effect of the appearance of War Production Board representatives at the various convention sessions was noticeably regarded with approval by the mills, as evidencing a practical business approach to war production and price problems, in place of a former attitude felt by many to be due to theoretical economists. Practically every man on the staff of the OPA section handling paper prices, for instance, is from the industry for whose affairs he will function on behalf of the Government.

This quality begins with the best wool that can be produced, manufactured under a rigid plant control so that the finished felt meets all modern paper mill requirements for high speed production.

Since 1890 Appleton Felts have year by year kept pace with the rapid progress of the paper industry. Today Appleton Felts are standard for all those characteristics mills prefer in felts.

make APPLETON FELTS good paper

Appleton Woolen Mills

APPLETON • WISCONSIN

Salesmen's Association

Has Record Attendance

▶▶▶ AT THE ANNUAL MEETING of the Salesmen's Association of the Paper Industry held in the Waldorf-Astoria Hotel, New York City, February 16, Courtney H. Reeves, of the Allied Paper Mills, Kalamazoo, Mich., was elected president. Mr. Reeves, who during the last year served as Western vice president of the Association, succeeds John D. Johnston, of the Gaylord Container Corporation.

Norman Beardsley, of the Union Bag and Paper Corporation, previously Eastern vice president, was elected vice president, and last year's assistant Eastern vice president, Stanley O. Styles, of the Martin Cantine Company, was named Eastern vice president. No assistant Eastern vice president was chosen for 1942. Burt B. Fisher, of the Bergstrom Paper Company, assistant Western vice president last year, was elected Western vice president, and Forrest Patterson, of the Flambeau Paper Company, assistant Western vice president. Dr. E. O. Merchant was again named secretary-treasurer of the Association.

At the annual meeting, activities for the past year—both from a business and social standpoint—were reviewed, and reports of the officers revealed the Association to be in a healthy condition, with a steadily growing membership. President Johnston presided.

Always a highlight of the American Paper and Pulp Association convention in New York, the annual luncheon of the Salesmen's Association in the main ballroom of the Waldorf-Astoria on Tuesday of Convention Week established a new high record of attendance this year. The approximately 1,450 members and friends of the Association constituted what was described by Oscar of the Waldorf as the largest gathering the hotel has ever had the privilege to serve at a luncheon.

Retiring President Johnston presided at the luncheon. After delivering his annual message he introduced several at the speakers table, including John L. Riegel, president of the American Paper and Pulp Association; Oscar Stamets, president of the Superintendents Association; E. W. Tinker, executive secretary-treasurer of the A.P.P.A.; Courtney H. Reeves, the newly-elected head of the Salesmen's Association; Norman Beardsley, vice president of the Association; A. E. Cadman, secretary of the Canadian Pulp and Paper Association; Walter C. Shorter, who is retiring from the War Production Board to become a Lieutenant-Colonel in the Army, and Dr. E. O. Merchant, secretary of the Salesmen's Association.

A special guest was Norbert A. McKenna, chief of the Pulp and Paper Branch of the WPB, who on the preceding day had addressed a meeting of more than a thousand paper men at the annual luncheon of the National Paper Trade Association in the same grand ballroom.

Addressing the large gathering of paper men, President Riegel of the A.P.P.A., said:

"I deeply appreciate the opportunity of addressing the salesmen of the paper industry at this time when we face so many issues of far-reaching importance. The year just past presented problems to the industry that have taxed the resourcefulness and ingenuity of management and required the maximum degree of co-operation between management, Government, and labor. Despite these many problems the industry has for the third time since 1937 broken all previous yearly production records.

"Paper and paperboard production in 1941 of 17,300,000 tons exceeded by 2,800,000 tons the previous record in 1940, and full credit is due to management and personnel for this magnificent effort.

"It may be hard for you to remember that when we met last February our mills were not running full and prices for many grades of paper in many mills were not high enough to cover cost increases that had taken place. We were in the second trough of demand following the tremendous burst of orders for paper after the declaration of war and a second smaller peak after the invasion of Scandinavia.

"Last February, however, new orders were advancing rapidly and for months thereafter stayed considerably above the maximum capacity of the industry to produce.

"In spite of this, paper price increases were relatively small and in general were necessary to balance increased production costs.

"We of the paper industry are looking back to 1941 with the satisfaction of having done a steady and creditable job in meeting the unprecedented demand for our product.

"What about 1942? With the present backlog of orders, near capacity operations seem assured for the first six months. If the need of the country is that we produce at maximum, and provided raw materials and operating supplies are available, the industry could make 18 to 19 million tons of paper and board—far more

(Concluded on page 1238)

Eugene Peoples Thomas (left), president of the National Foreign Trade Council and guest speaker at the SAPI luncheon, chats with Stanley Styles, Eastern vice president of SAPI.

PUMPING EQUIPMENT THAT KEEPS THE PAPER COMING

Three of six thin black liquor pumps in diffuser house

Elbow propeller type pump in stock circulating service

Belt-driven centrifugal paper stock pump

Three centrifugal mill water supply pumps

Centrifugal paper stock pump in a prominent midwestern plant

PRODUCTION without interruption . . . that's the objective today, and Worthington pumps are helping materially in this achievement. The ability of this equipment to stay on the job under adverse conditions is now seen as an operation factor of major importance.

And, in the substitution of materials for those no longer available, Worthington's knowledge of pump metallurgy in relation to paper mill requirements, becomes increasingly valuable in avoiding costly misapplications.

A complete line, including pumps for stock and every liquid encountered in a paper mill, offers the unquestioned advantage of responsibility centered upon a single manufacturer of known reliability.

On any expansion or change-over plans, it is good business to invite a Worthington recommendation. CP2-1

WORTHINGTON PUMP AND MACHINERY CORPORATION
HARRISON, NEW JERSEY

Two centrifugal pumps transferring green liquor from slurrying tank to storage

Alloy pump constructed of corrosion resistant Worthite alloy

Battery of black liquor evaporator pumps

Turbine well pump for main water supply

WORTHINGTON

The annual luncheon of the Salesmen's Association at the Waldorf-Astoria was a record-breaking event. It was conceded that the Hotel had never before served a luncheon to so large a gathering.

WHEELS MUST BE KEPT TURNING FOR VICTORY

IN your own "all-out" effort to meet the pressing problems of design and production you are invited to make use of any small part the Jones organization might be able to play in helping you to keep the wheels turning for victory.

Our Bulletin No. 80 "Jones Drives for Industry" may be helpful to you in giving you a complete picture of the Jones products, engineering services and manufacturing facilities that are available. Your request will bring a copy.

W. A. JONES FOUNDRY & MACHINE CO., 4439 Roosevelt Road, Chicago, Ill.

Jones

HERRINGBONE — WORM — SPUR — GEAR SPEED REDUCERS • PULLEYS
CUT AND MOLDED TOOTH GEARS • V-BELT SHEAVES • ANTI-FRICTION
PILLOW BLOCKS • FRICTION CLUTCHES • TRANSMISSION APPLIANCES

Divisional Groups

Hear Timely Addresses

Writing Paper Manufacturers Association

▶▶▶ Three speakers addressed the 81st annual meeting of the Writing Paper Manufacturers Association in the Jansen Suite of the Hotel Waldorf-Astoria on Tuesday, February 17, in connection with the 65th yearly American Paper and Pulp Association convention, February 15-20 inclusive. The speakers were Norbert A. McKenna, chief of the Pulp and Paper Branch of the War Production Board, Washington, who spoke on "The Writing Paper Industry Faces Total War;" Morris C. Dobrow, executive secretary-treasurer of the Association, on "The Economic Picture," and H. T. Martin, Labor Commissioner of the Connecticut Valley and Berkshire Mills, on "The Labor Outlook."

The Association elected J. D. Zink, of the Strathmore Paper Company, West Springfield, Mass., president, succeeding A. C. Gilbert, of the Gilbert Paper Company, Menasha, Wis. H. H. Hanson, of W. C. Hamilton & Sons, Miquon, Pa., and M. D. Bardeen, of the Lee Paper Company, Vicksburg, Mich., were elected vice presidents; M. C. Dobrow, executive secretary and treasurer, and G. V. Johnson, assistant secretary.

The president, vice presidents and the following will compose the Executive Committee for the coming year: H. R. Baldwin, Hammermill Paper Company, Erie, Pa.; G. H. Beckett, The Beckett Paper Company, Hamilton, Ohio; H. V. Burgee, Parsons Paper Company, Holyoke, Mass.; D. D. Coffin, C. H. Dexter & Sons, Inc., Windsor Locks, Conn.; Bruce Crane, Crane & Co., Inc., Dalton, Mass.; I. N. Esleeck, Esleeck Manufacturing Company, Turners Falls, Mass.; R. D. W. Ewing, American Writing Paper Corporation, Holyoke, Mass.; W. J. Garrity, Munising Paper Company, Chicago; A. C. Gilbert, Gilbert Paper Company, Menasha, Wis.; J. E. Holmes, Crocker-McElwain Company, Holyoke, Mass.; R. S. Madden, Mohawk Paper Mills, Inc., Cohoes, N. Y.; E. A. Oberweiser, Fox River Paper Corporation, Appleton, Wis.; A. C. Remley, Nekoosa-Edwards Paper Company, Port Edwards, Wis.; F. H. Savage, International Paper Company, New York, and W. B. Zimmerman, Maxwell Paper Company, Franklin, Ohio.

The Association concluded its convention with separate meetings of the Cover Paper Group and the Bristol Board Group on the following day.

Kraft Paper Association

▶▶▶ The Kraft Paper Association at its annual meeting on February 17 in the Waldorf-Astoria Hotel re-elected E. R. Gay, of the St. Regis Paper Company, as president for the ensuing year, and George B. Gibson, of the Union Bag and Paper Corporation as vice president. The following Executive Committee also was elected:

J. E. Alexander, Nekoosa-Edwards Paper Company; J. H. Cowhill, Tomahawk Kraft Paper Company; William H. Anders, Nashua River Paper Company; G. F. Henderson, Brown Company; W. J. Henry, Southern Advance Bag & Paper Company; J. H. Hinman, International Paper Company; R. A. McDonald, Crown-Zellerbach Corporation; C. R. McMillen,

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Salesmen's Association

(Continued from page 1234)

than in 1941. This, with expected imports, would probably be sufficient for all needs and certainly more than ample for essential civilian and defense needs.

"Last year we worked hard and at least had the satisfaction of operating very fully and generally with profit. This year we will have to work harder, may not be permitted to operate fully, and our profits will probably be curtailed. We may have to give up selling to many former customers. We may have to cut our rate of operations in spite of the fact that we could sell far more than our maximum capacity to produce.

"I feel no hesitation, however, in pledging that the paper industry will promptly make whatever sacrifices are necessary to defeat the Axis."

Eugene P. Thomas, president of the National Foreign Trade Council, made an elucidating address on the subject "Economic Accord Among the United Nations," in which he touched on many phases of present world conditions particularly as applying to export and import matters.

"Of vital concern to the future peace of the world is economic collaboration," said Mr. Thomas. "We are charged as a nation with the responsibility of planning for a world economic order which is the antithesis of that which Hitler is planning. Ours will envisage, to quote the words of Mr. Sumner Welles at Rio, 'broad economic and social development, for increased production of the necessities of the world, and for their equitable distribution among the people.'

"We have witnessed in the past the disorder wrought by the Nazi barter method of carrying on foreign trade. We know what plans the Axis powers have conceived for the enslavement of the world politically and economically. We see in Europe what the Hitler new world order would be like, should we fail to win both the war and the peace.

"The measure of the task before American manufacturers, therefore, may be gauged by the fundamental changes both in their domestic and foreign trade. I need not dwell upon those conditions as they affect you in your domestic business. Our foreign trade, however, is inextricably bound up with all our external relations, political as well as economical. Those engaged in domestic trade cannot but realize the effects of any fundamental changes in our export trade that would seriously impair our domestic economy.

"The United Nations are fighting for their existence. We cannot longer apply the yardstick of strict reciprocity to our trade with these countries that are our allies. As the war progresses, it is probable we shall receive less and less in imports and furnish more and more to supply the exacting needs of the other nations.

"Meanwhile, we are paying cash for our imports and investing large sums in the development of strategic materials abroad. This situation will prevail for some time after the war, but, of course, we cannot continue indefinitely to buy more than we sell. Let us then turn to our plans for the future, broadly incorporated in the Atlantic Charter, to which twenty-six nations have subscribed."

THE ARMSTRONG-STAMM MOISTURE CONTROL SYSTEM

EXTREME simplicity characterizes the Armstrong-Stamm Moisture Control System. An "indicating" dryer near the dry end is supplied with a constant QUANTITY of steam. An increase in the moisture content of the entire sheet will lower the steam pressure in the "indicating" dryer. This pressure drop quickly effects a pressure raise in all other dryers to increase the drying capacity of the machine and maintain constant moisture content. A dryer sheet reverses the process. The equipment can be adjusted for any speed of pressure change consistent with machine requirements and turbine operating conditions.

This is a thoroughly tested system which is applicable to any paper machine and is now being used profitably by a number of mills. All installations are taken on a basis of complete satisfaction guaranteed. For complete information, write today.

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Chesapeake-Camp Corporation; J. R. Miller, West Virginia Pulp and Paper Company, and N. S. Stone, Mosinee Paper Mills Company.

I. B. Oseas was retained as counsel, and Dernell Every as assistant secretary.

Newsprint Manufacturers Association

▶▶▶ At the annual meeting of the Newsprint Manufacturers Association in Le Perroquet Y Suite of the Waldorf-Astoria on February 18, Arthur L. Hobson, of the St. Croix Paper Company, was re-elected president, and J. D. Zellerbach, of the Crown-Zellerbach Corporation, was again chosen vice president. Louis W. Adams was named secretary, and R. S. Kellogg treasurer. Executive Committee members elected were: George D. Bearce, Maine Seaboard Paper Company; Samuel Pruyn, Finch, Pruyn & Company, Inc., and John H. Smith, Hawley Pulp and Paper Company.

Groundwood Paper Manufacturers

▶▶▶ E. G. Murray, of the St. Regis Paper Company, was again chosen president of the Groundwood Paper Manufacturers Association at the annual meeting in the Carpenter Salon of the Waldorf-Astoria on February 16. E. G. Bennett, of the Escanaba Paper Company, was elected Western vice president, and P. A. Mahony, of the International Paper Company, Eastern vice president. These officers, together with J. H. Coy, Flambeau Paper Company, and Aubrey Crabtree, Fraser Industries, Inc., will comprise the Board of Governors for 1942.

Walter C. Shorter, of the International Paper Company, retiring vice president of the Association, spoke at the meeting on the reorganization of OPM units into the WPB. Capt. Carl M. Bortz, of the Quartermaster General's office in Washington, and Lieut. Robert B. Hamilton, of the Jersey City Quartermaster Depot, spoke on the Government's requirements for groundwood papers. Vance Edwardes, of the International Paper Company, commented on the latest developments with respect to the chlorine curtailment program; Warren B. Bullock, of the Import Committee of the Paper Industry, spoke on import matters, and A. Sawyer, of Wise, Corlett & Canfield, attorneys, gave an informal talk on the Price Control Law.

The Association passed resolutions commending the services during the past year of Dr. E. O. Merchant and R. E. Canfield as secretary and executive vice president, respectively. Dr. Merchant and Mr. Canfield were named to continue to serve the Association for the ensuing year.

Glassine and Greaseproof

▶▶▶ The Glassine and Greaseproof Manufacturers Association held its annual meeting in the Pillement GH Suite of the Waldorf-Astoria on February 18, and elected Robert F. Nelson, of the Glassine Paper Company, chairman to succeed Folke Becker, of the Rhinelander Paper Company. The following Executive Committee was named: Mr. Becker, Olaf Hedstrom, president Hartford City Paper Company; Paul E. Hodgdon, president Deerfield Glassine Company; Harry B. Kuhns, vice president Nicolet Paper Corporation; Paul F. Moore, president Westfield River Paper Company, and John L. Riegel, president Riegel Paper Corporation.

Specialty Paper and Board Affiliates

▶▶▶ The Specialty Paper and Board Affiliates at their annual convention on February 17 and 18 in the Waldorf-Astoria Hotel elected the following Executive Committee: P. R. Bachman, Riegel Paper Corporation; Edward Bailey, Hollingsworth & Whitney Company; T. Stewart Foster, Foster Paper Company; W. S. Gamble, Brownville Board Company; H. S. Lewis, J. P. Lewis Company; George E. O'Connor, Mohawk Paper Mills; Walter B. Sheehan, Missisquoi Corporation; S. B. Sutphin, Beveridge Paper Company; Kendall Wyman, Champion Paper and Fibre Company, and Louis E. Vose, Hollingsworth & Vose Company.

At the sectional meetings group chairmen were chosen as follows: Tag and File Folder Group, E. R. Lyman, Missisquoi Corporation; Bogus Bristol Group, S. B. Sutphin, Beveridge Paper Company, and Mill Blank Group, Kendall Wyman, Champion Paper and Fibre Company.

The general meeting of the Affiliates was featured by an address by Robert M. Macy, chief of the Paper and Paper Products Section of the OPA, on "The Price Control Law."

The Tissue Association

▶▶▶ J. M. Conway, of the Hoberg Paper Mills, was again elected president of The Tissue Association at the annual meeting of that organization in the Waldorf-Astoria on February 17. E. E. Grant, of the Crystal Tissue Company, was elected vice president; B. F. Picola, of the Gotham Tissue Mills, treasurer, and Ross A. Fife, executive secretary.

Members of the Executive Committee elected are George Bidewell, Adams Paper Company; R. G. Fairburn, Berst-Forster-Dixfield Company; Joel Hartman, Barclay Tissue Corporation; A. B. Hansen, Northern Paper Mills; S. Lopin, Mazer Paper Mills; R. A. Monteith, Pond's Extract Company; F. W. Plowman, Scott Paper Company; Norman Seagrave, Port Huron Sulphite & Paper Company; B. I. Reider, Victoria Paper Mills; William F. Shafer, Jr., Flower City Tissue Mills; R. W. Sweet, Sweet Bros. Paper Manufacturing Company; R. B. Stevens, Stevens & Thompson Paper Company; P. Toye, American Tissue Mills, and S. Wishnick, Park Tissue Mills.

B. I. Reider was elected chairman of the Roll Toilet Tissue Division, Sam Lopin chairman of the Paper Towel Division, R. B. Stevens chairman of the Interfolded Toilet Tissue Division, W. F. Shafer, Jr., chairman of the Wrapping Tissue Division, R. W. Sweet chairman of the Jumbo Roll Division, R. A. Monteith chairman of the Sanitary Absorbent Tissue Division, and George Bidewell chairman of the Kraft Tissue Division.

Speakers at the annual meeting were: E. W. Tinker, executive secretary of the American Paper and Pulp Association, who spoke on the Association's role in present day industry problems; John L. Riegel, president of the American Paper and Pulp Association, on "Successful Co-operation between the A. P. P. A. and Its Divisional Associations," and A. E. Sawyer, counsel, on "The Price Control Act."

Sulphite Paper Manufacturers

▶▶▶ Fred W. Cole, of Fraser Industries, Inc., of which he is general sales manager with headquarters in New York City, was elected general chairman of the Sulphite Paper Manufacturers Association at the annual meeting of that group in the Jansen Suite of the Waldorf-Astoria on February 16. The following vice chairmen were chosen: *Bleached Group*—John Stevens, Jr., Marathon Paper Mills; *Unbleached Group*—George Stuhr, Southern Kraft Division of the International Paper Company; *Manila Group*—Rufus L. Sisson, Jr., Racquette River Paper Company; *Machine Glazed Group*—Edgar W. Kiefer, Port Huron Sulphite and Paper Company. *(Bottom Page 1242)*

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National Paper Trade Association

▶▶▶ The National Paper Trade Association of the United States, whose membership comprises the leading paper jobbers and merchants of the country, held its thirty-ninth annual convention at the Waldorf-Astoria Hotel, New York, on February 16-20, inclusive, simultaneously with the yearly gathering of the American Paper and Pulp Association.

Richard C. Kettles, Jr., of Charles F. Hubbs & Company, New York, was elected president of the Association for 1942, succeeding Perry W. Lesh, of the C. P. Lesh Paper Company, Indianapolis, Indiana, who had served two annual terms. C. E. Roach, of the Capital City Paper Company, Springfield, Mass., was elected vice president in charge of the Wrapping Paper Division, and J. H. Brewer, of the Storrs & Bement Company, Boston, Mass., vice president in charge of the Fine Paper Division. Charles W. Vernon, of Vernon Bros. & Company, New York, was re-elected treasurer, and A. H. Chamberlain was again chosen executive secretary.

Among those who addressed the meetings of the paper merchants were Norbert A. McKenna, chief of the Pulp and Paper Branch of the War Production Board; J. F. Strub, chief of the Distribution Unit, Pulp and Paper Branch, WPB; E. W. Tinker, executive secretary of the American Paper and Pulp Association; George P. Lee, chief of the Fine Paper Section, Pulp and Paper Branch, WPB; Frank W. Howe, chief of the Wrapping Paper Section, Pulp and Paper Branch, WPB; Charles J. Grant, chief of the Writing Paper Section, Pulp and Paper Branch, WPB; Martin D. Schwartz, chief of the Industrial Papers Section, Pulp and Paper Division, OPA, and Albert F. Miller, Senior Business Analyst, Fine Paper Distribution Unit, OPA.

Norbert A. McKenna, chief of the Pulp and Paper Branch, of the WPB, spoke at the meeting of the National Paper Trade Association.

Shortly after the convention, it was announced that Mr. McKenna has resigned from the War Production Board. He is succeeded by David J. Winton, of Minneapolis.

The foregoing officers together with John E. Alexander, Nekoosa-Edwards Paper Company; Winfield E. McIntyre, Dexter Sulphite Pulp and Paper Company; Harold O. Nichols, Crown-Zellerbach Corporation; Walter B. Merlin, Hollingsworth & Whitney Company; Leroy F. Porter, Northwest Paper Company, and Rufus I. Worrell, Mead Sales Company, Inc., comprise the Board of Governors of the Association for 1942.

Blotting Paper Manufacturers

▶▶▶ Meeting at the Waldorf-Astoria Hotel on February 16, the Blotting Paper Manufacturers Association elected G. A. Carlton, of the Standard Paper Manufacturing Company, Richmond, Va., president for the ensuing year to succeed Henry S. Mead, of the Wrenn Paper Company, Middletown, O. Joseph Hallowell, of the Wrenn Paper Company, was chosen vice president, succeeding Ulysses S. Bratton, Jr., of the Rochester Paper Company, Rochester, Mich., and R. L. Winget, of New York, was again named secretary-treasurer. Every firm member of the Association was represented at the annual meeting.

Soda Pulp Manufacturers

▶▶▶ The Soda Pulp Manufacturers Association held its annual meeting on February 17 at the Hotel Waldorf-Astoria and elected Eustis Paine, of the New York & Pennsylvania Company, New York City, chairman; Amor Hollingsworth, of the Penobscot Chemical Fibre Company, vice chairman, and Rufus I. Worrell, of the Mead Sales Company, Inc., secretary and treasurer. These three officers and W. Benzing, Champion Paper and Fibre Company, and Carl Nieswander, Columbia Paper Company, will compose the 1942 Executive Committee.

Secretary Maudlin stated that the entire pulp and paper industry will be brought under some form of government control by April 1 next, either through a rigid allocation of pulp or the curtailment of paper production to that of a base period, such as 1938 or 1939. He reported that contributions by pulp producers to the relief pool for customers of nitration pulp mills would have to be doubled in March over February, because lease-lend pulp is to be included in the

NORTON ABRASIVES

Every step in the manufacture of Norton Pulpstones is the result of exhaustive research in the ground-wood industry. Every process is laboratory controlled

WHEN IT'S AN ABRASIVE PROBLEM, CALL IN NORTON ENGINEERING SERVICE

NORTON COMPANY
WORCESTER, MASS.

allocation. However, the M-52 order which established the pool will not be extended beyond March 31 and a more general plan will take its place, he said.

The Paper and Pulp Division of the War Production Board has drawn up an elaborate allocation plan for all pulp, by which existing pulp contracts would be cancelled as of April 1 and an industry committee of nine executives would determine the order in which mills could deliver pulp. The plan, however, has not received complete approval in Washington on the ground that it gives the Government too much power, and an alternative has been offered, Mr. Maudlin stated. The alternative program would freeze paper production at the 1938 or 1939 level, which would mean a reduction in 1942 output of 3,000,000 to 4,000,000 tons from the 1941 level. Mr. Maudlin expressed the opinion that of the two plans, the allocation program was more likely to be accepted.

Mr. Macy in his address dwelt on the pricing policies of the OPA in the pulp, paper and waste paper fields.

"We had hoped to keep price control of wood pulp on a voluntary basis, and take no specific action on the prices of pulp," said the government official. "A few producers of pulp, however, are refusing to play ball and it looks like we will have to place this commodity under the price law in the very near future. I regret the need for this move very much, and had hoped we could retain a more flexible type of price control in anticipation of possible rapid changes in the underlying condition.

"Cost data suggest very strongly that since July, 1940, there was no curtailment of the supply of pulp because the price was too low. Pulp producers have been making very handsome profits, and nearly every pulp mill capable of holding together is running at capacity levels. If it can be demonstrated that any pulp mill has such high costs that it cannot operate under the OPA price ceiling, the necessary adjustments in price for such a mill will be made to keep it in operation."

Paper Makers Advertising Association

The Paper Makers Advertising Association held its annual meeting and luncheon in the Hotel Lexington, New York, on February 18. Maurice A. Park, of the Marvellum Company, was re-elected president, and other officers elected were Richard A. Faulkner, International Paper Company, Eastern vice president; E. S. Colvin, Appleton Coated Paper Company, Western vice president; Floyd L. Triggs, Riegel Corporation, treasurer, and Bradley E. Stafford, Strathmore Paper Company, secretary.

In addition to President Park, Frederick B. Heitkamp, vice president of the American Type Founders Sales Corporation; Edson Dunbar of the Crocker-McElwain Company, and Lieut. Robert Hamilton, a former paper man who is now with the Army Quartermaster Depot in Jersey City, N. J., addressed the luncheon-meeting.

Glazed and Fancy Paper

The annual meeting of the Glazed and Fancy Paper Manufacturers Association was held on February 16 at the Hotel Commodore, New York. Leo R. McDevitt, of the Blackstone Paper Company, was re-elected president; John M. Hazen, of the Hazen Paper Company, was elected vice president for the Manufacturing Division, and Charles H. Hoffman, of Hughes & Hoffman, vice president for the Merchandising Division. Newly-elected members of the Executive Committee are Arthur R. Walsh, Walther & Co., Inc.; Ralph K. Lane, Bradner Smith & Co., and Samuel Lachman, Lachman-Novasel Paper Company. Arthur A. Thomas is executive director of the Association. A luncheon followed the meeting and election of officers.

Association of Pulp Consumers

The proposed pulp allocation plan and the OPA's pricing policies were the principal subjects discussed at the annual meeting of the Association of Pulp Consumers, Inc., at the Waldorf-Astoria Hotel on February 18. The first subject was dealt with by C. V. Maudlin, executive secretary of the Association, and the latter by Robert M. Macy, chief of the Paper and Paper Products Section of the OPA.

George R. Wallace, president of the Fitchburg Paper Company, Fitchburg, Mass., was re-elected president of the Association, and Carlton W. Smith, president of the Miamisburg Paper Company, Miamisburg, Ohio, was elected vice president, succeeding W. Irving Osborne, Jr., president of the Cornell Wood Products Company, Chicago. Mr. Maudlin was re-elected secretary-treasurer.

Directors elected were (for three years) Norman F. Greenway, Robert Gair Company, New York City; P. W. Hodgdon, Deerfield Glassine Company, Monroe Bridge, Mass.; Robert R. Richardson, Gardner-Richardson Company, Middletown, Ohio; Dwight L. Stocker, Michigan Paper Company, Plainwell, Mich.; (for two years) Austin E. Cofrin, Fort Howard Paper Company, Green Bay, Wis.; Glenn E. Graham, Sutherland Paper Company, Kalamazoo, Mich.; Hugh H. Hanson, W. C. Hamilton & Sons, Miquon, Pa.; D. G. W. Hollister, APW Paper Company, Albany, N. Y.; George R. Wallace, Fitchburg Paper Company, Fitchburg, Mass.; (for one year) N. H. Bergstrom, Bergstrom Paper Company, Neenah, Wis.; Douglas Crocker, Crocker, Burbank & Co., Fitchburg, Mass.; W. Irving Osborne, Jr., Cornell Wood Products Company, Chicago; James F. Ryland, Standard Paper Mfg. Company, Richmond, Va., and Carlton W. Smith, Miamisburg Paper Company, Miamisburg, Ohio.

The annual report of President Wallace commented on the fact that the Association has expanded, in less than a year, from a charter membership of 53 mills to 203 mills at present, making it one of the largest single groups in the paper industry.

United States Pulp Producers

The United States Pulp Producers Association held its ninth annual meeting at the Waldorf-Astoria, New York, on February 15, and elected an Executive Board for 1942 consisting of the following:

New England — Amor Hollingsworth, Penobscot Chemical Fibre Company.

Middle Atlantic—Norman W. Wilson, Hammermill Paper Company.

South—M. B. Houston, Rayonier, Incorporated.

Lake States—Folke Becker, Rhinelander Paper Company.

West Coast—Robert B. Wolf, Pulp Division, Weyerhaeuser Timber Company.

Directors at Large—Ossian Anderson, Puget Sound Pulp and Timber Company; Downing P. Brown, the Brown Company; Alexander Calder, Union Bag and Paper Corporation; J. M. Conway, Hoberg Paper Mills; Stuart B. Copeland, the Northwest Paper Company, and U. M. Dickey, Soundview Pulp Company.

Oliver M. Porter, of New York, was again named executive director.

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"WHAT IS RESEARCH" TOPIC OF CHEMISTS

"What Is Research" was the topic of the joint meeting of the American Section of the Society of Chemical Industry and the American Institute of Chemical Engineers which was held February 20, 1942, at the Chemists Club, New York City. The chairman,

When you save the face of a dryer felt you save the felt itself. That is why face saving in the case of WOODBERRY 887 reinforced dryer felts is not just a figure of speech but a reality . . . a fact. Asbestos yarns, woven at scientifically determined intervals into the face of WOODBERRY 887 felts greatly prolong their life. It is this patented feature which is responsible for the important records in dryer felt economies which WOODBERRY 887's are setting wherever they are used. Specify them for your mill today.

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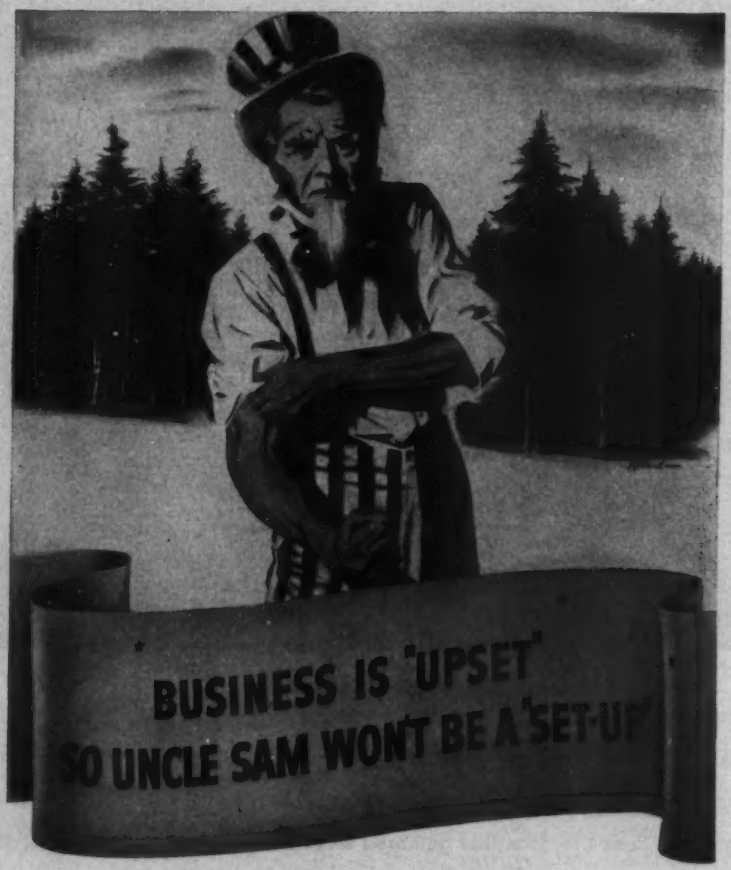
Dr. Lincoln T. Work, director of research of the Metal and Thermit Corporation, presided.

Dr. Work, the first speaker, put the question "What Is Research," citing the broad definition of the term "research" as used today, and pointing out the need for considering the many-sided activities now called research in order to ascertain the distinguishable points of difference between fundamental scientific investigation, process development, investigation for the improvement of plant practice, etc. He stressed the importance of understanding the place of research in our industrial structure.

The question from the consultant's viewpoint was discussed by Frank G. Breyer, of Singmaster and Breyer, and the industrial viewpoint was covered by Dr. George C. Curme, Jr., vice president of Carbide & Carbon Chemicals Corporation. Dr. Curme pointed out the established tradition of clear expression of thought in chemistry, and drew a contrast with the confusion of meanings of the word research as it is commonly used. He outlined the uses made of experimental investigations in industry and pointed out that difficulty arises from each group speaking in terms relative to its own fortuitous position and not in terms describing function, relative to profession as a whole.



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◆

STANDARDS FOR 1942

The American Standards Association has announced publication of its new list of Standards for 1942. Standards and specifications, always important, are more so today to aid in national defense production. This particular list of standards will be of great assistance to engineering and purchasing departments of all manufacturing companies.

The list includes nearly 500 American standards in a variety of industrial fields. Included are definitions of technical terms, specifications for metals and other materials, methods of test for the finished product, dimensions, safety provisions for the use of machinery, and methods of work. They reach into every important engineering field, serving as a basis for many municipal, state, and federal regulations.

Anyone interested may secure copies of the list of American Standards for 1942 by addressing the American Standards Association, 29 West 39th Street, New York, N. Y.

◆

NAM ORGANIZES TO AID INDUSTRY'S WAR PRODUCTION

Speaking as president of the National Association of Manufacturers at a press conference recently, Wm. Porter Witherow, asserted that the industrial plants of the nation are geared to turn out maximum and uninterrupted production.

Mr. Witherow assured press men that the Association is ready to assist business in all of its production problems; that not only will it co-operate to the limit, but that it will also lead the way.

Announcement also was made that a new War Committee will reorganize and manage the Association's war production activities for the duration. This new committee will be headed by Malcolm Muir, publisher of *Newsweek*, and will include in its membership leading industrialists qualified by long and specialized experience to deal effectively with the complex problems of all-out war production.

Details of a plan by which workers in war industries will be encouraged to submit ideas or suggestions to speed production will be announced shortly.

IF YOU ARE GROPING

with unfamiliar problems of corrosion,

PUT IT UP TO US!

Because the phrase "corrosion-resistant" is all-comprehensive, it is often abused. What may be properly termed corrosion-resistant under certain conditions is not necessarily true under other circumstances.

If you are faced with acid-handling problems, you must consider corrosion. And you want the right answer right away. There is no time to lose these days.

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If specialized knowledge of the metallurgy and engineering of corrosion-resistant equipment can help you, it will pay you to enlist the cooperation of our personnel. Ask the Duriron Company representative . . . he's an engineer who **serves** as well as **sells.**

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DAYTON, OHIO

ASSOCIATION REPORTS

Newsprint Paper in 1941*

ROYAL S. KELLOGG, Secretary
News Print Service Bureau

▶▶▶ A TRUE COMPARISON OF 1941 production is with the average production of 4,329,000 tons in 1937-38 which gives the 1941 total an edge of 457,000 tons over that of three to four years earlier. The most accurate statement that can be made is that output of newsprint paper in North America in 1940 and 1941 was at an all-time high for a 24-month period.

The newsprint mills begin 1942 at practically capacity operation either upon newsprint or other products which they are capable of manufacturing. This is also true of other paper mills.

The 4,786,000 tons of newsprint produced in North America in 1941 was in round numbers made to the extent of 72 per cent in Canada, 21 per cent in the United States and 7 per cent in Newfoundland. These totals were 7,000 tons more in Canada than in the preceding year, 1,500 tons more in the United States, and 6,300 tons less in Newfoundland, making a net increase of only 2,200 tons over 1940.

Shipments from the mills during the year exceeded production by 37,000 tons with a corresponding decrease of mill stocks as of December 31, 1941. As of that date, mill stocks were the lightest of any December 31 since 1937.

Exports

Exports of newsprint paper from Canada were reported by Ottawa to have had a monetary value of $154,356,000 in 1941. This was the largest export item in Canada's greatest year in export history with the exception of $161,856,000 for wheat. Moreover, newsprint contributed 9.5 per cent to the total value of $1,621,000,000 of Canada's export trade last year.

Exports of newsprint from Newfoundland to all destinations amounted to 346,226 tons in 1941 and to 367,174 tons in 1940.

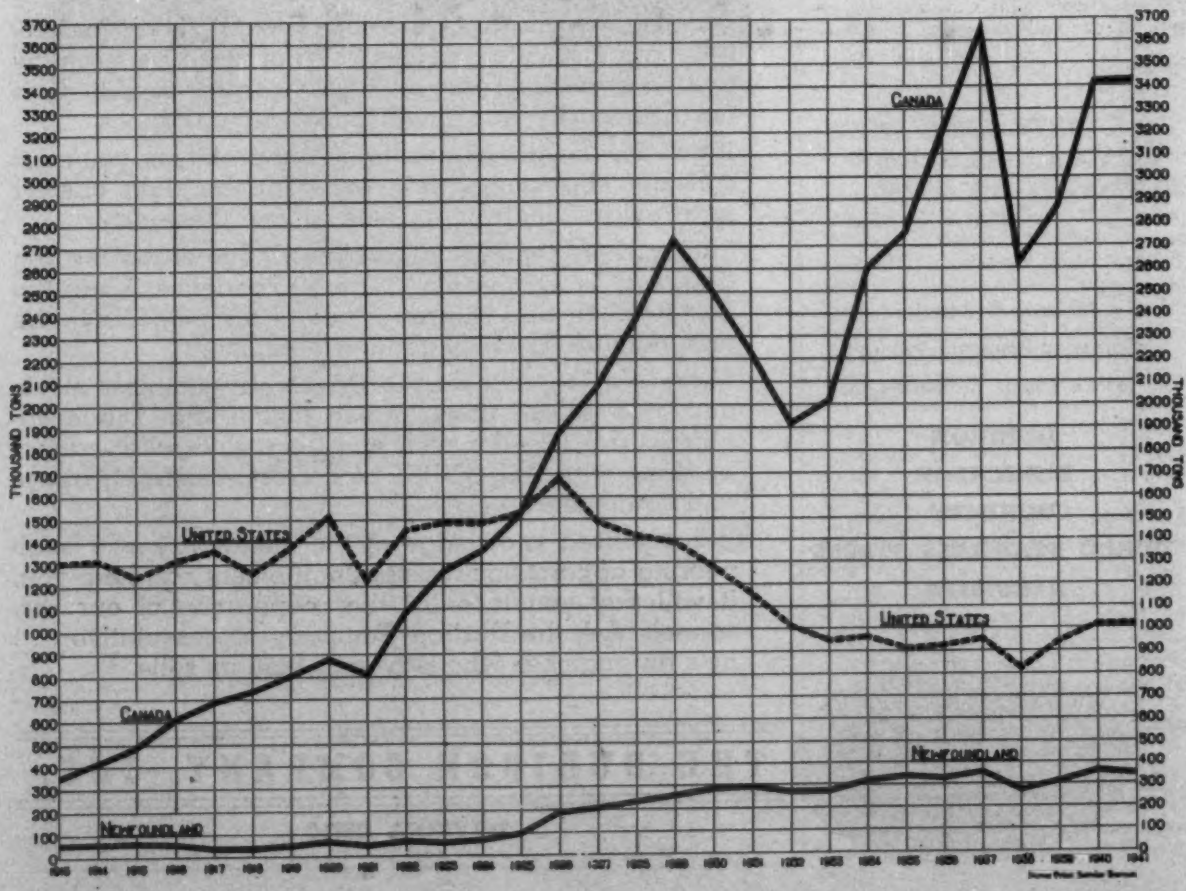
No monthly reports of imports or exports of any commodity into or out of the United States have been released since those for September, and so far the Department of Commerce has been adamant to all requests for such figures during the time the United States is at war. In this respect, Washington is much less accommodating than Ottawa with information helpful to domestic industry and harmful to no essential cause. For the first nine months of 1941, the Department of Commerce reported a total of approximately 55,000 tons of newsprint exported from the United States.

Royal S. Kellogg

Outlook

The outlook for newsprint paper in 1942 cannot be discussed separately from the

NEWS PRINT PRODUCTION 1913–1941
UNITED STATES–CANADA–NEWFOUNDLAND



$5,223.24 to Draw a Picture of Color

THE intricate mechanism shown here—a spectrophotometer—automatically draws a picture of the exact color of any paper sample or paper-making material.

This is just one example of the complex instruments and special equipment Hercules employs to maintain uniform high-quality in the chemicals produced for paper makers. Hercules' facilities of this kind are far more extensive than an individual paper maker would be justified in acquiring, but these facilities, as well as the high quality products they make possible, are available to users of Hercules paper-making chemicals.

PAPER MAKERS CHEMICAL DEPARTMENT
HERCULES POWDER COMPANY
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WILMINGTON, DELAWARE

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MARRERO, LA.
MILWAUKEE, WIS.
NEW YORK, N. Y.
PENSACOLA, FLA.
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SAVANNAH, GA.
STONEHAM, MASS.
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AND STILL "GOING STRONG!"

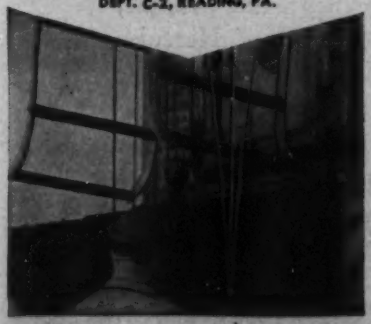
And savings like that every year for twelve years don't just happen. They are engineered. But this manufacturer got even more advantages from letting Reading engineers solve his handling problem.

- Coal and ash handling was speeded, letting the engineer take care of the engine room, too. (The company saved money and the engineer made more.)
- Maintenance costs averaged less than 1% a year for twelve years.
- Fuel costs were cut by more even firing of the boiler.
- Less dust and dirt reduced the need for frequent boiler room cleaning and repaint jobs.

NOTE: This Reading installation did such a good job that it has been duplicated in several manufacturing plants.

Remember that when results and savings are in the specifications . . . it pays to rely on Reading's engineering ability.

READING CHAIN & BLOCK CORP.
DEPT. C-2, READING, PA.



READING
Chain Hoists, Electric Hoists, Cranes and Monorails

world war program. Newsprint paper is less likely to be affected by that program than are some other grades of paper. A good deal of public control has already been imposed on some grades. If, when and how such control will be imposed upon newsprint is still a matter of speculation. If Government decides that such control is necessary, it is likely to be imposed regardless of opinion in the industry. There is enough newsprint manufacturing capacity in North America to supply all visible domestic and foreign demand if it is allowed to operate.

There is no way of forecasting how much production costs may be increased by the end of 1942. The only certainty is that the longer the war goes on, the more they will go up despite all governmental efforts to hold down prices. The best that can be hoped for in that respect is that price increases will be moderate and gradual rather than spasmodic and excessive. The gap between newsprint and general commodity prices is widening rapidly.

(*) Abridged.

◆

Review and Outlook for Kraft Paper Industry*

E. R. GAY, President
Kraft Paper Association

▶▶▶ THE KRAFT PAPER INDUSTRY established in 1941, for the third consecutive year, new records for production and sales. Orders rose 22 per cent, production 16 per cent, and shipments 19 per cent over the 1940 totals. At the end of 1941, unfilled orders were 76 per cent greater than on January 1, while stocks of finished paper on hand at the mills declined 23 per cent during the same period.

Operations already were at a high level when the year began. Pressure for still greater output continued to increase until, by the end of April, the industry was operating at maximum capacity, limited only by the supply of pulp available for those mills which, prior to the German invasion of Norway, were dependent upon imported Scandinavian pulp and which are now obliged to seek domestic suppliers.

Had it not been for the substantial increase in productive facilities which had been accomplished since 1936, the industry would have fallen far short of meeting the demands placed upon it during the year. The rapidly advancing defense program called for large quantities of kraft paper, in addition to a considerably increased civilian demand.

Kraft, the strongest of all papers made from wood pulp, has become a necessity to virtually all of the industries contributing to the war effort. There is no satisfactory substitute for kraft paper as a wrapping or packaging material. In addition, kraft paper is required for condensers, for interleaving steel plates, for the waterproof paper which goes into shell cases, to name only a few of its essential war uses.

Furthermore, substantial quantities of kraft paper are now being required for the manufacture of heavy-duty bags to replace the burlap formerly used as containers for agricultural and chemical commodities. Burlap imports have been restricted as the result of the war in the Far East and, of the amount remaining available in this country, a high percentage will be required for sandbags and other military purposes.

In September, Norbert A. McKenna, Chief of the Pulp and Paper Branch, appointed a five-man Kraft Paper Manufacturers' Subcommittee. The members of this committee are Messrs. S. M. Phelan, Jr., J. R. Diggs, G. F. Henderson, J. D. Johnston and H. O. Nichols. I. B. Oseas, counsel for the Association, has acted as counsel for the committee and Mr. Every as secretary.

The Association has contributed to the work of the committee not only through financial assistance but also by making available working space, statistical services and trained personnel. The committee has months of work ahead of it, already assigned by the War Production Board, and each week brings new problems on which the advice of the committee is sought.

The manufacturers of kraft paper also have co-operated wholeheartedly with the Office of Price Administration in its work of preventing inflationary price advances. In May, nine of the leading manufacturers of wrapping paper entered into voluntary agreements with that Office to stabilize the price of standard kraft wrapping paper for the remainder of the year. Again, in December, sixteen manufacturers made similar agreements with respect to this grade for the first quarter of 1942.

Outlook for 1942

For the duration of the war, kraft paper manufacturers appear to be assured of continued heavy demand for their product. War requirements are expected to be more than sufficient to offset any reduction resulting from the inevitable closing down of non-essential industries. Indeed, there is danger that the war needs will be so great that they will make impossible the fulfillment of all civilian needs, particularly in the field of retail trade.

There will be further increases in productive capacity in 1942. Once these projects now under way are accomplished, however, it is unlikely that preference ratings for further expansion can be granted. The industry will be called upon, furthermore, to increase its contributions of pulp under the Lend-Lease Act and to Latin America. These contributions, estimated at 225,000 tons for the year, will affect integrated and converting mills alike, since all pulp producers are required to give their pro-rata share.

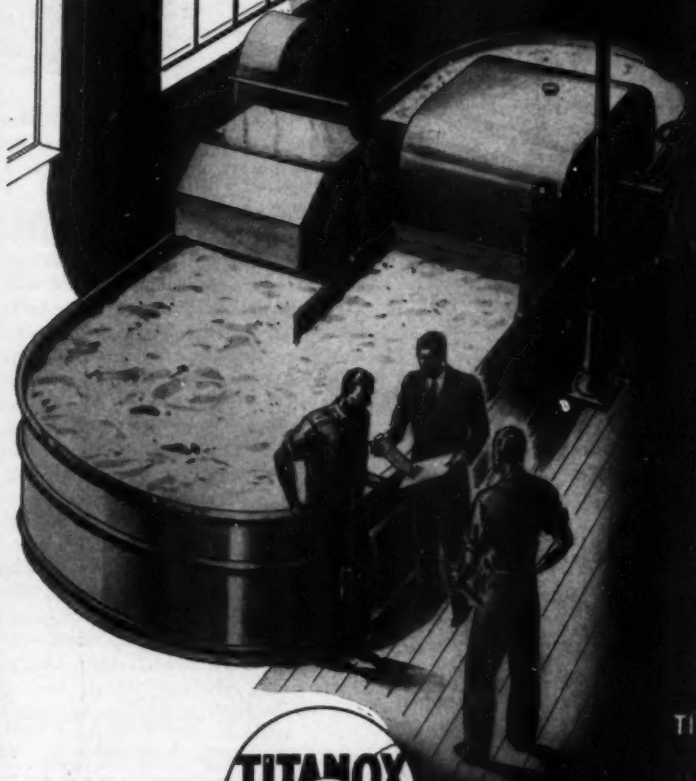
Whatever problems and difficulties 1942 may bring, I know that the manufacturers of kraft paper will meet them bravely and without fear as to the consequences of the war program upon their individual affairs.

Customer relationships, built over a period of years, will in many instances have to be interrupted for the duration. This sacrifice, unpleasant though it is, is far smaller than those which others less fortunately situated will be called upon to endure. The kraft paper industry can and will make a substantial contribution to the biggest job before us all, that of helping to win the war.

(*) Abridged.

SAVE PULP? *Certainly!*

and your TITANOX pigments will help you...



Now more than ever will TITANOX pigments reveal the great advantages which they contribute in the manufacturing of white and tinted paper stocks because of their unsurpassed opacity, whiteness and brightness. As the Paper Industry turns to lighter weight stocks to conserve pulp, as the paper mills are confronted by deficiencies in other raw materials, the problem of maintaining high quality becomes of primal importance.

TITANOX pigments lend positive aid in the solution of this problem because they produce those characteristics which make for high quality with a minimum of pigmentation.

Use TITANOX pigments to reduce show through, to preserve strength, to produce a satisfactory surface for printing.

TITANIUM PIGMENT CORPORATION

111 Broadway, New York, N. Y. • 332 South Michigan Ave., Chicago, Ill. • National Lead Company's Pacific Coast Branch, 2240 Utah St., San Francisco, Calif.

TITANOX

TRADE MARK

OPACITY
WHITENESS
BRIGHTNESS

ALLIED

REYNOLDS MAKES NEW PACKAGING MOISTUREPROOF

A new, waterproof, vaporproof material for defense packaging has been developed by the Reynolds Metals Company of New York City.

Designated as Type B, this new product is a sturdy moistureproof material, especially valuable as a covering for fiber cans, or as liners, bags, box coverings, as well as for titewraps and cartons. J. Louis Reynolds, vice president in charge of sales, has announced that additional customers now can be accommodated. However, the company is accepting business only from firms with definite priority ratings.

◆

WIDER USE OF CYLINDERS FOR CHLORINE ASKED

The Mathieson Alkali Works, Inc., New York, is making an appeal that chlorine and ammonia cylinders be kept in constant circulation, otherwise, many users of these two vital chemicals may have difficulty in obtaining adequate supplies.

In spite of having to make heavier shipments than ever before, producers are unable to get new cylinders and the existing supply must serve all users. However, if cylinders are kept circulating, the demands of all essential industries can probably be met.

When cylinders are idle, it is usually due to carelessness, and this can be easily corrected if those in charge realize the need for prompt action. All those having reserve stocks of either ammonia or chlorine should do everything within their power to get the cylinders back into service as quickly as possible.

◆

GOODRICH CO. ANNOUNCES NEW AMERIPOL HOSE

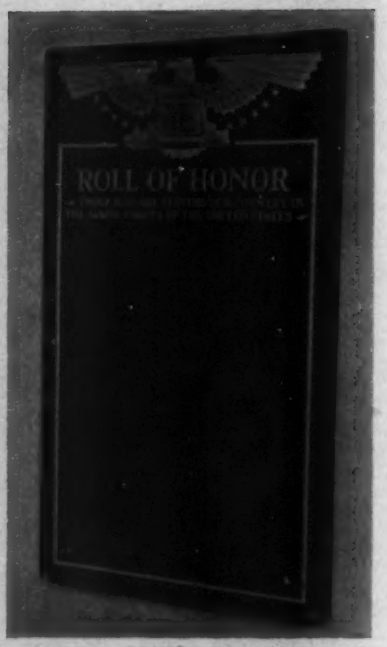
Announcement of an added construction for its Type 400SS oil hose, with elimination of all natural rubber and the substitution of its own synthetic rubber, Ameripol, has been made by The B. F. Goodrich Company, Akron, Ohio.

This type hose is also made with an Ameripol synthetic rubber tube, but with the cover and rubber used to impregnate the body plies of natural rubber. The new design incorporates Ameripol in every part of the hose. Thus, all the hose is made resistant to the action of oils, gasolines, or other solvents of natural rubber. The new construction also affords stronger adhesion of all parts, with an additional margin of safety against ply separation.

◆

"ROLL OF HONOR" PLAQUE OF GLASS

Plants, offices, and other organizations having employees or members serving in the armed forces of the United States will be interested in the new "Roll of Honor" plaque designed by the Pittsburgh Plate Glass Company, Pittsburgh, which has the dual advantage of providing both a temporary and permanent record of names of those serving their Country.



The plaque is made of polished black Carrara glass, on which the emblem is sand-carved and painted with varnish-protected gold leaf. The name of the individual company or organization is inscribed at the bottom. Names of employees or members who depart for the Service are painted on the plaque with white or gold paint. When the list is complete, the names can be inscribed permanently by sandblasting, at which time they can be rearranged alphabetically if so desired.

The use of glass instead of metal for these plaques has several advantages. It provides a permanent memorial that is impervious to the elements, retains its sparkling finish, does not craze, and cannot tarnish. At the same time, essential metals are released for more important war needs.

◆

W. A. JONES HOLDS 2-DAY CONFERENCE

The sales force and factory executives of the W. A. Jones Foundry & Machine Company, Chicago, held a two-day conference at the Palmer House in Chicago last month.

Highlighting the meeting were sales and production problems brought about by the tremendous war requirements and the place of the sales organization in rendering important services to the trade in connection with proper application and use of products.

Executives and salesmen of W. A. Jones Foundry & Machine Co., Chicago, gathered for a two-day conference to consider important national aspects of business.

ALLIS-CHALMERS FORMS NEW DEPT.

A new department to co-ordinate its sales policies has been announced by the Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin. Walter Geist, a vice president of the company, is to head this new department.

In announcing this move, W. C. Buchanan, president, stated it was necessary because of the company's all-out war effort which puts practically its entire productive capacity at the disposal of the Army, Navy, Air Corps, and vast number of manufacturers producing material vital to the war effort.

In addition to forming and executing sales policies, the new department will correlate and simplify selling activities for the company's 1,600 products, with the exception of tractors.

◆

POMONA PUMP CO. ACQUIRES WESTCO PUMP—ST. LOUIS

Pomona Pump Company of Pomona, California, announces the purchase of the Westco Pump Division of Micro-Westco., Inc., Bettendorf, Iowa. The newly-acquired business will be known as Pomona Pump Company, Westco Division, at 2621 Locust Street, St. Louis, Missouri. Manufacture will be continued from the St. Louis plant of the Pomona Pump Company. Management and key personnel of Westco will be transferred to St. Louis.

George A. McKenna, president of Pomona Pump Company, in making the announcement, stated that as a result of this purchase, coverage will be extended in the entire pumping field, particularly in industries having diversified pumping problems.

◆

INT. FILTER HAS NEW NAME—NOW "INFILCO INC."

"Infilco Incorporated" is the new name of the International Filter Company, Chicago, a pioneer in the field of water conditioning and allied equipment for 48 years.

P. N. Engel, president of the company, stated the name "Infilco Incorporated" was the natural selection. The streamlined abbreviation of the old name was adopted as the company's registered trade-mark more than 10 years ago, at which time the majority of equipment manufactured was al-

"LIGHTNIN" MIXERS SAVE TIME AND MONEY ON THESE 6 JOBS!

Sample Disintegration
Dyes and Colors
Finishes
Coatings
Casein and Clay Suspensions
Calcium Carbonate Slurries

By simply clamping a "LIGHTNIN" Portable Mixer onto any tank, kettle, vat, barrel or other container you have an instantly available complete mixing unit that will handle most of your mixing problems with greater speed and less cost.

PORTABLE, easily moved from one container to another and readily adjustable to any desired angle, geared and direct drive, "LIGHTNIN" Portables range in size from 1/30 to 10 H.P., to meet every operating condition. Any type motor—shafts and propellers of any machinable material you specify. Sealed outboard bearing prevents oil or grease from this source running down shaft and contaminating mixture.

Extremely sturdy construction. With reasonable care you are assured of 7 to 10 years or longer of mixing service, making this the lowest cost unit you can buy.

Send for Catalog B-65 which tells the complete story on "LIGHTNIN" Portables. It is the most complete work ever gotten out on portable mixers—your copy is awaiting your request.

- Turbine Type
- Top Entering Mixers
- Side Entering Mixers

MIXING EQUIPMENT COMPANY, INC.

1035 Garson Avenue, Rochester, N. Y.

MIXING EQUIPMENT CO., INC. 1035 Garson Avenue, Rochester, N. Y.
Please send me:
_____ Catalog B-65—Portable Mixers
_____ Catalog B-48—Top Entering Mixers
_____ Catalog B-66—Side Entering Mixers
Name _____
Title _____
Company _____
Address _____

ready other than filters. For the past decade, the name "Infilco" has identified its zeolite and lime-soda water softeners, settlers and clarifiers, chemical feeders, causticizing and filter plant equipment which have been furnished the pulp and paper industry.

◆

LATEX PROCESSING BY NEW METHOD

A new method of processing, of vital interest to users of latex for cementing, impregnating, and coating purposes extends the volume of latex from 50 per cent to 300 per cent (depending upon the particular use to which it is to be put) while retaining the major characteristics of the original product as well as a good proportion of its natural strength.

This new process has been developed in the laboratories of the Union Bay State Company, Cambridge, Massachusetts. It makes use of a filler material of such fine size that it blends extremely well with the rubber particles.

Since the conservation and wider usability of present latex supplies are of vital importance to America's war effort, every government-allowed user of latex for cementing, impregnating, and coating purposes will be interested in learning more of the process's extending possibilities.

◆

HOBBY CLUB ROSTER

Manning, Maxwell & Moore, Inc., Bridgeport, Connecticut, have just distributed a book that is indeed different. This novelty is called the *Jobbers' Salesmen's Hobby Club Roster*, and it has been distributed to approximately 6,000 jobbers' salesmen. The book contains the hobby and home address of the jobbers' salesmen who received the book.

The idea back of this unique compilation was to establish communication between salesmen in different parts of the country who are interested in the same hobby. This interchange of correspondence has started to build good will already, both among these salesmen and between the men and Manning, Maxwell & Moore.

◆

NEW MAGNESIUM-CHLORINE PLANT

In accordance with a contract which has been signed by the Defense Plants Corporation and the Mathieson Alkali Works, Inc., announcement is made that work on a new plant for the production of metallic magnesium and chlorine will be begun immediately.

The plant, which will be located at . . . and will cost approximately $22,500,000, will be owned by the Defense Plants Corporation. It will be operated by Mathieson and will produce about 36,000,000 pounds of magnesium a year by a process developed by Mathieson.

This process differs from other processes for making magnesium electrolytically, in that it does not consume chlorine but produces it in such concentration that it can be collected and liquefied.

S A F E T Y

N. Y. PAPER MILLS WIN SAFETY HONORS

When awards were made in the Associated Industries of New York State's 17th annual accident prevention campaign, pulp and paper manufacturers were prominently represented among those honored for distinctive records. The meeting, attended by more than 400 employers and factory foremen from this war production area was held in Lincoln Auditorium.

Entries in the pulp and papermaking group winning merit certificates for operating with a clean record of no lost time accidents during the campaign period from September 28 to December 27 were: Paper Manufacturing Division, Eastman Kodak Company, Rochester; Certain-teed Products Corporation, Niagara Falls; National Gypsum Company, New Windsor Plant, Newburgh; and the Flintkote Company, Lockport.

The paper mill of Oswego Falls Corporation in Fulton, won an honorable mention certificate for a near perfect record. Officials of the company announced they would co-operate with safety innovations being conducted by the Syracuse Chamber of Commerce.

The Paper Industry Safety Scores

July 1, 1941 to June 30, 1942

Out of 188 mills reporting for January, 18 have perfect record

PERFECT SCORES
Division I—Pulp and Paper Mills

PARTICIPANT	MILL	LOCATION
GROUP A		
GROUP B		
Quebec North Shore Paper Co.	Baie Comeau, P.Q.	Canada
Hoberg Paper Mills, Inc.	Division "A"	Green Bay, Wis.
St. Croix Paper Co.	Woodland	Maine
GROUP C		
American Writing Paper Corp.	Parsons Div.	Holyoke, Mass.
The Mead Corporation	Harriman Div.	Harriman, Tenn.
American Writing Paper Corp.	Crocker Div.	Holyoke, Mass.
Marathon Paper Mills Co.	Ashland	Wisconsin
GROUP D		
U. S. Gypsum Company	Oakmont Mill	Oakmont, Pa.
*U. S. Gypsum Company	Board Mill	Lisbon Falls, Me.
U. S. Gypsum Company	North Kansas City	Missouri
Spaulding Fibre Co., Inc.	Milton	New Hampshire
American Writing Paper Corp.	Mt. Tom Division	Holyoke, Mass.
International Paper Co.	Livermore No. 11	Livermore Falls, Me.
International Paper Co.	Riley No. 23	Riley, Maine
Spaulding Fibre Co., Inc.	Hayes	New Hampshire
Division II—Paper and Board Re-Manufacturing		
Thilmany Pulp & Paper Co.	Bag Mill	Kaukauna, Wis.
Bird and Son, Inc.	Roofing Plant	Shreveport, La.
Bay West Paper Co.	Green Bay	Wisconsin

*January report missing—covers six months only.

SUMMARY OF CONTEST EXPERIENCE

Division	Man-Hours Worked	Reportable Injuries	Frequency Rate 1941-42 (7 Mos.)	Comparison of Rates with 7 Mos. of 1941
All Divisions	127,767,823	2,114	16.55	+17%
Paper & Pulp	115,087,057	1,910	16.60	+16%
Group A	67,261,004	947	14.08	+16%
Group B	23,802,280	408	18.53	+19%
Group C	11,143,169	243	21.81	+ 6%
Group D	3,980,680	113	29.82	+27%
Paper & Board Re-Manufacturing	12,680,966	204	16.06	+30%

Out of NEUTRAL

You go exactly nowhere in neutral. Regardless of how much fuel you consume or how fast you race your engine, you still don't move an inch until you get in gear. That is true of motors—of individuals, of manufacturers, of a nation arming against aggression.

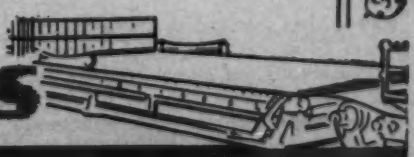
A strange union has come to pass in Industry. Quantity, always at odds heretofore with quality, has lately become its partner. We dare offer to Defense only the best of which we are capable *—and the most.* Toward anything less we can have no complacency; *we cannot remain in neutral.*

BUT have you noticed that, despite the mounting demand for production, excellence of product invariably comes first? That point is always specifically mentioned or just as definitely understood. "Output" cannot have the slightest significance in the presence of defects. It's *out of neutral,* then, and *into high gear,* for all of us, with reference to everything that matters. We at Lindsay are increasingly conscious of this attitude.

THE LINDSAY WIRE WEAVING COMPANY

14001-14299 Aspinwall Avenue • Cleveland, Ohio

Lindsay **WIRES**



FOR PAPER MILLS

NAMES *in the* NEWS

Personals

E. PETERSON HAS NEW CONNECTION IN YOUNGSTOWN

A communication from E. Peterson, formerly with the B. F. Goodrich Company, Akron, Ohio, brings word of his new connection—that of vice president of The Youngstown Welding & Engineering Company, Youngstown, Ohio.

For quite some time, Mr. Peterson has been the Goodrich company's manager of sales to the paper industry. In

E. Peterson

connection with his work he had spent the most of his time on the sales and development of rubber-covered rolls.

Mr. Peterson will not sever his connection with the industry entirely, inasmuch as The Youngstown Welding & Engineering Company does considerable work with the industry in the covering of rolls with non-corrosive metals.

◆

▶▶▶ After a course in administrative work, *Thomas L. Stirling,* of Holyoke, Massachusetts, an executive with the Hercules Powder Company, has been commissioned a senior grade lieutenant in the U. S. Navy. Mr. Stirling at one time was connected with the company's London plant before being transferred back to the United States.

▶▶▶ After joining the legal staff of the General Electric Company in 1925, *Phillip D. Reed* became assistant to the president and a board member in 1937. He was made chairman of the board in 1940, and announcement has just been made that he will head the Industrial Branches in the Division of Industry Operations of the War Production Board. Mr. Reed has been serving in different branches of the Priorities Division for the past year.

◆

▶▶▶ For more than 32 years chief electrician with the Neenah Paper Company, Neenah, Wisconsin, *Fred C. Mason* recently retired from that position. Not only was he the oldest plant electrician in Neenah, but he also was the first man to hold that type of job in the city.

◆

FORREST WEBSTER, FORMER NIAA PRES., CALLED TO SERVICE

This will announce to friends in the industry that Forrest U. Webster, past president of the National Industrial Advertisers Association and account executive of McManus, John & Adams, Detroit, has been ordered to active duty under his commission as captain, Field Artillery Reserve.

Captain Webster was president of NIAA during the fiscal year 1932-33 when he was advertising manager of Cutler-Hammer, Inc., Milwaukee. He served with the 122nd Field Artillery, 33rd Division during World War I, and is the first past president of NIAA to be called to service in World War II.

◆

▶▶▶ *Walter Geist,* a vice president of the Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin, has been elected a director of the National Electrical Manufacturing Association. C. E. Frudden, executive engineer of the Tractor Department, has gone to Washington to become technical advisor to the Farm Equipment Section of the War Production Board.

◆

▶▶▶ *G. B. Foster,* of the Montreal law firm of Hackett, Mulvena, Foster, Hackett, and Hannen, has been elected a director of Brompton Pulp and Paper Company, Ltd.

▶▶▶ Word has just been received that *Howard Morgan,* mill manager of the Munising Paper Company, Munising, Michigan, has been made vice president of the company. Mr. Morgan will continue in charge of mill operation.

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▶▶▶ For the past year, *R. Calvert Haws* has been associated with The McCarty Company, advertising counsel, Los Angeles, California. Mr. Haws has now joined the Western Precipitation Corporation to assist *Richard F. O'Mara,* sales manager, in advertising and sales promotion. Mr. Haws formerly headed his own advertising agency in Chicago.

◆

▶▶▶ To extend its program of sales training for company salesmen, Manning, Maxwell & Moore, Inc., Bridgeport, Connecticut, announces the ap-

Albert A. Haniford

pointment of *Albert A. Haniford.* Mr. Haniford was previously assistant to the director of dealer relations, Johns-Manville Corporation.

◆

▶▶▶ The election of *Edwin H. Brown* as vice president of the company in charge of engineering and development has been announced by the Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin. Mr. Brown has been manager and chief engineer of the engine and condenser department for the past seven years. *M. L. Carson,* sales engineer, has succeeded Mr. Brown.

▶▶▶ The board of directors of Morris Machine Works, Baldwinsville, New York, announce the election of *Stuart J. Saks* as president of the company. Mr. Saks has been associated with the company for the past two and one-half years as assistant to the president. He is a graduate of Syracuse University.

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▶▶▶ Research co-ordinator for Appleton (Wisconsin) papermakers is the new position given to *J. M. Holderby,* former superintendent of the Neenah-Menasha sewage treatment plant.

◆

W. A. DELAHEY GIVEN CONTROL OF PULPWOOD IN CAN.

W. A. Delahey has been appointed Assistant Timber Controller in Charge of Pulpwood. He is well known in the pulp and paper industry in Canada and the United States. He was thirteen years with Canadian International Paper Company and successively occupied the positions of forest engineer, Gatineau Division, assistant to the vice president at Montreal, and assistant to manager of woodlands at Montreal. For five years prior to his Canadian International work he was in the employ of the Ontario forestry branch.

Mr. Delahey graduated in forestry at the University of Toronto in 1914 and served throughout the first World War, retiring in 1919 with the rank of captain. From 1933 to 1935 he was vice president of the Canadian Society of Forest Engineers and during 1936 and 1937 was president.

◆

▶▶▶ As assistant general manager of its newly created Photo Products Department, E. I. du Pont de Nemours & Company, Inc., Wilmington, Delaware, has appointed *Charles L. Wiswall,* who has been director of sales of the company's R. & H. Chemicals Department since 1933. *Samuel C. Harris,* assistant director of sales of the R. & H. Chemicals Department since 1936, succeeds Mr. Wiswall as director of sales.

◆

▶▶▶ The appointment of *M. E. Carlisle* as general purchasing agent of the Pittsburgh Plate Glass Company, Pittsburgh, was announced February 23. In his new position, Mr. Carlisle succeeds *J. A. Bechtel,* who is retiring as head of the purchasing department after fifty years of service with the company.

NOW TO REDUCE YOUR WAREHOUSE

WASTE LINE

...WITH Towmotor

Towmotor takes up the slack in your warehouse, increases storage capacity without "letting out" on floor space . . . by stacking loads up to 25 feet high. In addition, this speedy, powerful "one man gang" streamlines your efficiency curves and cost figures by eliminating waste motion in every phase of receiving, storing and shipping.

Towmotor handles 1,000 to 10,000 lb. loads of bales, pulp, rolls, flat sheets as units instead of small individual loads. Thus, loading or unloading box cars and trucks becomes a matter of *minutes* instead of *hours.* In one *continuous* operation a capacity load is picked up in the carrier, hustled to the warehouse, stacked neatly in place. No costly re-handling. Towmotor is the fastest traveling, fastest lifting lift truck in the industry; is dependable gas-powered for 24-hours daily service—operating for less than the cost of 24 man hours.

Today Towmotor is helping to "stretch" storage capacity to absorb extra materials and increased production being fed into warehouses. Tomorrow, it will help industry "draw in its belt" by reducing non-productive costs. Towmotor engineers are at your service *now* to help you lick either problem.

TOWMOTOR COMPANY, 1271 E. 152nd Street, Cleveland, Ohio

Let TOWMOTOR (CLEVELAND) take the load off your hands

▶▶▶ A recent announcement states that *V. E. Kirby* has resigned his position as superintendent of Northern Kraft Corporation, Howland, Maine, and has accepted a position as pulp mill superintendent with Hummel Ross Fibre Corporation, Hopewell, Virginia.

◆

▶▶▶ Due to the tremendous growth of the company's business and the increasing need for greater engineering administration resulting from the completion of the new test station, *J. D. Wood* has resigned as president of the Roller-Smith Company, Bethlehem, Pennsylvania, in order that he may devote his entire time to the duties of chief engineer. Succeeding Mr. Wood, the board has elected *Reg Halladay*, a member of the board, and financial adviser to the late Colonel Roller. *F. A. Judson*, general manager of the company, has been made treasurer.

◆

▶▶▶ Announcement is made by the transportation bureau of the Portland Chamber of Commerce that *G. J. Gill*, of the Oxford Paper Company, Portland, and *S. T. Sturtevant*, of the Eastern Corporation, South Brewer (Maine) have been named to the Car Efficiency Committee of the New England Shippers Advisory Board. The function of the committee is to coordinate the shipping by rail in the State of Maine in order to conserve the use of much needed freight cars.

◆

▶▶▶ A member of the Sales Department since 1924, *John C. Russell* has now been appointed assistant sales manager of the Philadelphia Quartz Company, Philadelphia.

▶▶▶ In order that he may devote his time and effort to the problem of efficient combustion in industrial plants, *Edwin L. Dennis*, chief combustion engineer of the Coppus Engineering Corporation, Worcester, has asked to be relieved of his duties as instructor at Louisiana State University. His request has been accepted. Mr. Dennis' services, particularly in connection with the requirements of gas-burning boilers, stills, heaters, and kilns, will now be available to Coppus customers on a full-time basis.

We offer safe, economical solutions to all pulp and paper mill drainage problems with our twill weave, plain weave, sewed seam, and soldered seam wires.

INTERNATIONAL WIRE WORKS
Menasha, Wisconsin

Necrology

C. PFANSTIEHL

The scientific world suffered a loss with the passing of Carl Pfanstiehl on March 2 at his home in Highland Park, Illinois. He was 54 years of age.

As an inventor and engineer, Mr. Pfanstiehl was granted 130 American and foreign patents on electrical, chemical, radio, automotive, and metallurgical inventions, and was vice president and director of research of the Pfanstiehl Chemical Company in Waukegan, Illinois. For his work in industrial research, he was one of the "Modern Pioneers" honored by the National Association of Manufacturers in March, 1940.

Mr. Pfanstiehl founded what is known as the Fansteel Metallurgical Company in North Chicago and originally the company bore his name. However, when he left the company twenty years ago, the company name was changed to Fansteel.

◆

WM. G. SHORTESS

A number of paperboard manufacturing plants in the Eastern States lost a president in the passing of William G. Shortess who passed away suddenly February 5. Mr. Shortess was president of the following paperboard companies: Midvale Paper Board Company, Hudson, New York; Windsor Paper Mills, Inc., New York City; the Federal Paper Board Company, Bogota, New Jersey; the Inland Paper Board Company, Versailles, Conn.; the Acme Paper Board Company with plants at Reading, Pennsylvania, and Whitehall, Maryland; and the Liberty Paper Board Company at Steubenville, Ohio.

The widow is the only survivor.

WILLIAM H. HOWE

Well known as a paper manufacturer and merchant with mills and offices in many American and Canadian cities, William H. Howe passed away at his home in Buffalo, New York, on February 4 at the age of 71 years.

Mr. Howe had been in the paper business 53 years. He was born in Hamilton, New York. He entered the paper business with Mr. Hubbs in New York City and later traveled west to establish jobbing houses in Buffalo, Cleveland, Rochester, and Pittsburgh. The business grew and expanded and now bears the name of Hubbs & Howe Company. Mr. Howe was president of that company and was also an officer and director of many other paper organizations in the States and in Canada.

Survivors include a daughter and a son.

◆

EDGAR SUMNER BLISS

At the age of 74, Edgar Sumner Bliss, who for more than thirty-five years served as president of the Worthy Paper Company, Springfield, Massachusetts, passed away at his home in that city on February 22. He had lived in Springfield for the past forty years.

Three sons and a daughter survive.

◆

E. B. REDFORD

Secretary and a director of the Consolidated Water Power & Paper Company, Wisconsin Rapids, Wisconsin, E. B. Redford passed away at Rochester, Minnesota, on February 7. He was 63 years of age.

A native of Oshkosh, Mr. Redford had been prominent in banking and industrial circles in Wisconsin Rapids since 1906. He became secretary of Consolidated in 1916.

Surviving are his widow and a son, John, a Milwaukee attorney.

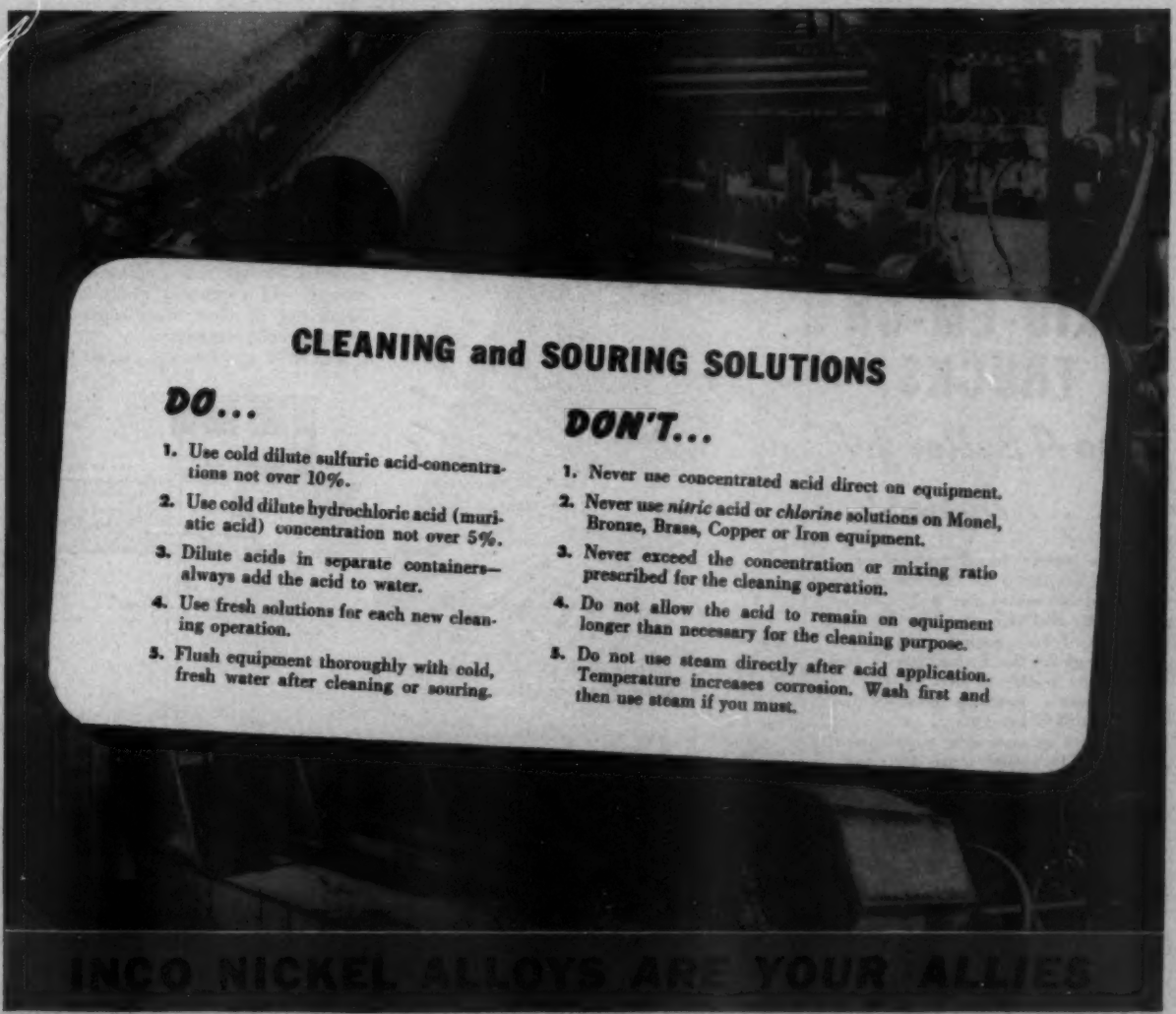
NOTES ON CONSERVATION OF CRITICAL MATERIALS... No. 1

In our common all-out effort for Victory, your Monel equipment is just as important as a soldier's gun. Abuse and mistreatment can make *both* miss when they're needed most. So in this and succeeding ads we will suggest ways to avoid abuses, assure the utmost service from equipment, and conserve hard-to-replace materials.

Corrosion of Stock Preparation and Paper Making Equipment

This results not so much from the "stuff," as from acids, alkalies and salts added for purposes of slime control, adjustment of pH, and for cleaning and souring solutions. *Of these, improper mixing and use of acid cleaning solutions is a frequent cause of unnecessary corrosion leading to premature failure of metal equipment.*

Monel resists cleaning solutions of the proper strength... and does better than most materials against solutions of excess strength. Nevertheless, in order to assure maximum equipment life we recommend strict adherence to the rules listed below. The International Nickel Company, Inc., 67 Wall Street, New York, N. Y.


CLEANING and SOURING SOLUTIONS
DO...
1. Use cold dilute sulfuric acid-concentrations not over 10%.
2. Use cold dilute hydrochloric acid (muriatic acid) concentration not over 5%.
3. Dilute acids in separate containers—always add the acid to water.
4. Use fresh solutions for each new cleaning operation.
5. Flush equipment thoroughly with cold, fresh water after cleaning or souring.
DON'T...
1. Never use concentrated acid direct on equipment.
2. Never use *nitric* acid or *chlorine* solutions on Monel, Bronze, Brass, Copper or Iron equipment.
3. Never exceed the concentration or mixing ratio prescribed for the cleaning operation.
4. Do not allow the acid to remain on equipment longer than necessary for the cleaning purpose.
5. Do not use steam directly after acid application. Temperature increases corrosion. Wash first and then use steam if you must.
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Ranney Water Collector Systems

J. F. RHOADES, Chief Engineer
The Mead Corporation

One of the drawbacks to the use of vertical wells as a source of water supply by the larger cities and industrial plants is the number of units required. The operation of each well must be supervised. This results in a larger amount of engineering, and maintenance work. For this reason waterworks engineers seek to reduce the number of operating units in their system to a minimum.

If physical conditions are suitable for Ranney collectors, one collector, because of its much larger screen area, can produce as much water as can be obtained by 10 or more vertical wells located in the same ground.

Concentration of the collection of water at fewer points makes for easier and more economic acquisition of the necessary land and simplifies feeder pipe lines and connections with the mains. Less primary and auxiliary mechanical equipment for a given capacity is required.

The design of the collectors (Figures 1-4) and their method of construction permits a certain choice of the geological formation and depth from which water is to be collected. Generally the extraordinary

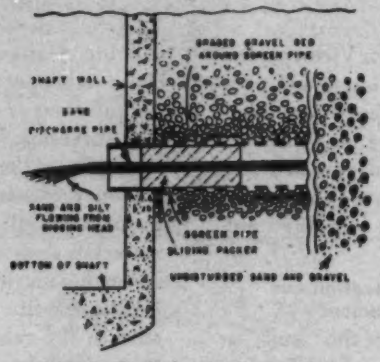

Fig. 1—Projecting a screen pipe.

slow and uniform rate of filtration that can be achieved, results in thorough bacteriological purification. Experience has shown that in some cases the water is softer than that of well at the same location, either because the drawdown being less, a smaller proportion of water is extracted from the deeper strata or because of slower velocities through the ground.

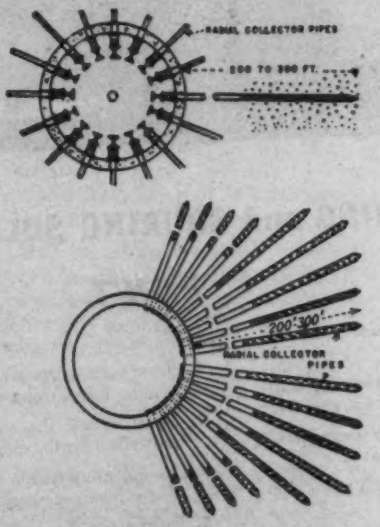

Fig. 2—Cross section and plan of collection showing screen pipes.

The quantity and quality of water coming from each screen pipe can be measured and tested. This simplifies the establishment of proper rates of filtration and pumping. By the backwashing or blowing of each pipe, which is easily done as a matter of routine, the effectiveness of the natural filter is maintained.

The water being supplied is at all times separated from the equipment and personnel by watertight walls, so that the chances of accidental contamination are even less than in the case of a filter plant. The bacterial content of water produced by Ranney units compares favorably with that of wells or filters.

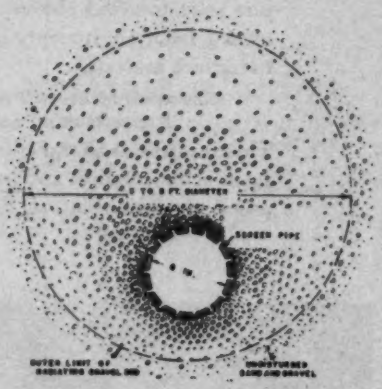

Fig. 3—Cross section of one of the radiating, horizontal gravel beds, from which sand and silt were removed. Velocity of water through screen openings is 2/100 of one foot per sec. Velocity into gravel beds 1/1000 of one foot per sec.

Saving in the cost of pumping is achieved through fuller utilization of the natural head (pressure) available and by larger and, therefore, more efficient motor pumping units employed.

The large screen area in contact with the

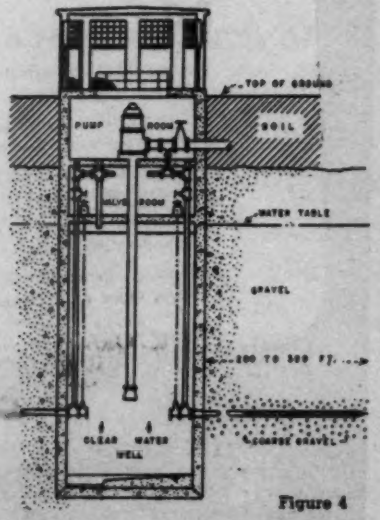

Figure 4

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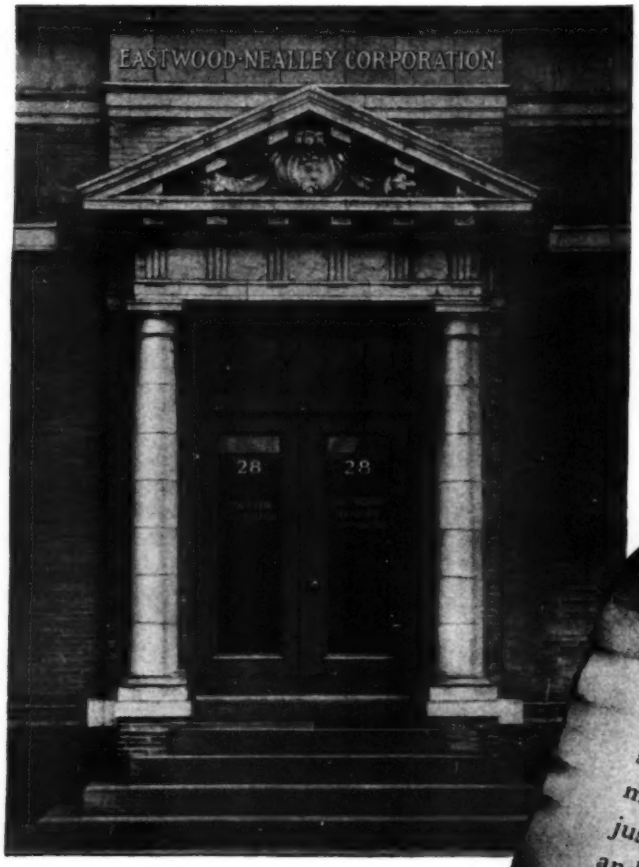
CENTRAL MACHINE WORKS
437½ S. Senate Ave. Indianapolis, Ind.

This is the first installment of abridgments of papers presented at the annual meeting of the **Technical Association of the Pulp and Paper Industry,** held in New York City, February 16-19, 1942. Monthly installments of these abridgments will appear in succeeding issues.



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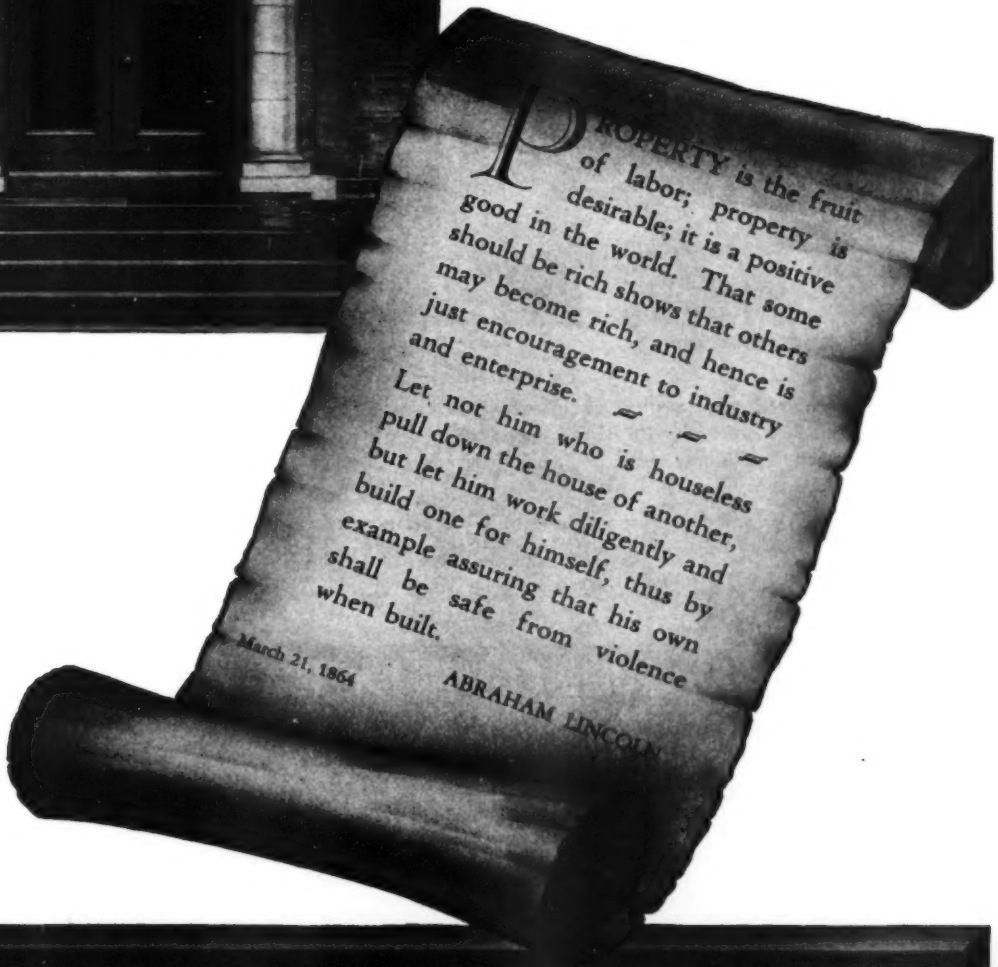
PROPERTY is the fruit of labor; property is desirable; it is a positive good in the world. That some should be rich shows that others may become rich, and hence is just encouragement to industry and enterprise.
Let not him who is houseless pull down the house of another, but let him work diligently and build one for himself, thus by example assuring that his own shall be safe from violence when built.
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water bearing material results in a correspondingly lower velocity of the water through the screen openings and the ground immediately adjacent thereto. The extension of the collector pipes and radial drains far beyond the shaft reduces approach velocity of the water through the aquifer.

The design of the collectors and their great stability, due to the depth of the caisson foundation, permits construction of the housing and access to the shaft well above maximum floor levels. All the operating machinery inside is protected, as there is no opening through which raw water can penetrate and the groundwater inlets are controlled by valves. In some cases submersible pumps will accomplish the same results at a smaller cost.

At flood stages there is a larger head over the collecting screens and hence the maximum capacity of the installation is greater. The quality of the water, however, would not be materially changed since the actual rate of infiltration, corresponding to consumption rate, is not altered and always remains under complete control.

The collector is a self-contained water producing system and will operate as long as power can be supplied by overhead or submarine cable, or by an emergency Diesel-electric unit that can be located within the collector.

An important and exclusive adjunct to the system is the method of flushing the individual screen pipes. This is effected by closing all but one of the control valves and temporarily lowering the level in the shaft, thus allowing the water to flow for a short time at an accelerated rate through each radial pipe in turn. This can re-establish the original capacity through the further removal of sand or the unpacking of the ground surrounding the screens.

If at some future time, because of unforeseen hydrological changes or for any other reason, it is desired to extend the original screen area or replace it with fresh screens, this can be done by pushing out new screen pipes through the portholes left in the walls of the shaft. Thus the only part of the installation that is subject to physical deterioration or loss in efficiency can be completely replaced at a cost of only a fraction of the original investment.

The first cost of Ranney units is determined by the depth to water-bearing ground, its permeability, the capacity desired and other factors. Usually the installations cost from $10 to $20 per 1000 gallons per day capacity. This is for a complete unit including pumps, housing, control apparatus, etc.

The over-all cost of water supplied by collectors is usually between 0.75 and 1.5 cents per 100 gallons. This includes all interest, amortization and operating charges as well as the cost of power for pumping to a working pressure of 50 to 75 psi.

Cross Sectioning of Paper

JOHN H. GRAFF[1] and M. A. SCHLOSSER[2]

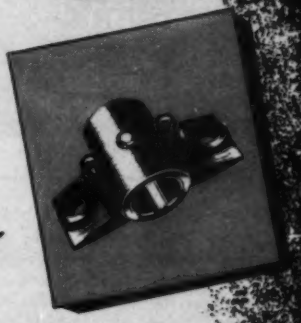
For extremely thin sections, when the shrinkage of the individual fibers and the expansion of the paper thickness do not have to be considered, the paraffin-embedding method is the best. If somewhat thicker sections are permissible, a combination cork-paraffin method is useful, and for rough cross sections, where little time is available, a plain cork method can be used; but if the shrinkage of the fibers and expansion of the thickness of the paper have to be avoided, or if the dehydrating and clearing fluids, solvents, or heat, will destroy the character of the paper to be cross sectioned, a celloidin-cork method is recommended.

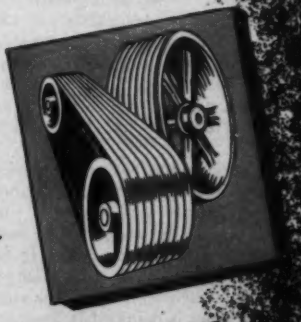
Standard Paraffin Mounts

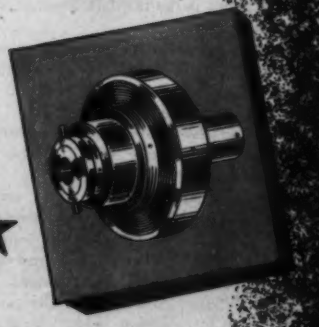
The paper to be sectioned is cut into a ribbon four or five mm. wide and about five cm. long. It is dehydrated by treating with 50 per cent ethyl alcohol for ten minutes, with 95 per cent ethyl alcohol for ten minutes, and with 100 per cent ethyl alcohol for another ten minutes. The paper is then placed in xylene for ten minutes to remove the alcohol, and finally transferred to a saturated solution of paraffin in xylene at room temperature for 30 minutes or longer in order to impregnate the paper. The strip of paper is removed from the xylene solution of paraffin and immersed in pure melted paraffin (having a melting point of 56 to 58 C.) for 30 minutes, after which the temperature of the paraffin bath is lowered until it is just above the melting point. The paper strip is then removed from the paraffin, plunged back into the bath, and the dipping is continued in this manner until a candle of paraffin of

(1) Research associate, The Institute of Paper Chemistry; (2) Ecusta Paper Corporation.

TO MACHINERY BUILDERS







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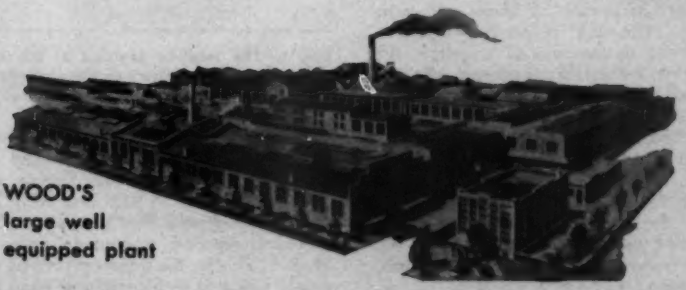

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the desired size is formed around the paper. This candle is quickly cooled under the tap water and trimmed for mounting in the object holder of the microtome.

The mount is placed in the holder so that the paper is parallel to the jaws of the holder; the knife is set at an angle of about 3 degrees with a tilt of about 15 degrees. The object holder is turned until the leading edge of the knife on one side and the paper on the other side make an angle of about 50 degrees (Figure 1).

The rolling or curling of the sections caused by the angle of slant can be overcome by catching the section on a camel's-hair brush during the cutting. A thin film of celloidin applied to the object surface before sectioning reduces rolling and aids in keeping the fibers within the section in their proper position.

The section is floated on a drop of water on the slide which previously has been given a thin coating of Mayer's albumen fixative. The slide is gently warmed to flatten the section and to evaporate the water. If a thin coating of celloidin has been used before cutting the section, the celloidin side is placed uppermost when the section is floated on the water.

After the water is driven off, the slide is placed in a bath of ether and alcohol to remove the celloidin, then into xylene to remove the paraffin, and finally into alcohol to remove the xylene, after which the section is stained, if necessary, and mounted in diaphane.

Good sections, 10μ or less, are easily obtained by this method.

Alcoholic solutions of dyes are more advantageously employed than aqueous solutions and should be applied just before mounting the sections in diaphane. This applies to reagents used for showing the distribution of sizing material on and through the cross sections.

Cork Mounts for Partly Prepared Papers

If extremely thin sections are not necessary, considerable time can be saved by mounting partly prepared strips in previously treated corks.

New, clean, mirrored No. 1 corks are prepared by weighing them to the bottom

Fig. 1—The relative position of the knife edge, the line of draw, and the alignment of the paper on the mount.

of a vessel and successively extracting them with 50 per cent, 95 per cent, and 100 per cent ethyl alcohol and clearing with xylene, the solvent in each case being kept at the boiling point for 30 minutes. This process is repeated, substituting xylene for alcohol. Finally, the corks are covered with xylene saturated with paraffin at room temperature and heated almost to the boiling point for one hour. Then the solution is poured off and the corks are placed on paper towels to dry. The corks may be kept in a wide-mouthed bottle until used.

The paper strips are dehydrated, cleared, and treated in the xylene-paraffin solution as described above, after which they are ready to mount. A longitudinal slit, with the long axis at least half way through one of the previously prepared corks, is made with a razor blade. The strip of paper from the xylene-paraffin solution is inserted longitudinally in the slit as shown in Figure 5.

The cork and paper are immersed in a bath of melted paraffin for 30 minutes. A dissecting needle stuck into the cork will hold it beneath the surface of the bath. The cork with its imbedded paper is removed from the paraffin, cooled, trimmed, and mounted in the microtome in the same manner that paper is mounted in a paraffin candle (Figure 1).

In mounting the cork with the paper in the microtome, it should be placed in the object holder so that the slit in the cork is parallel to the jaws of the holder. This prevents the slit from opening because of the pressure on both sides of the cork from the holder.

On a sliding microtome, 15μ sections can be cut by this method of imbedding; with a hand-microtome, 40μ to 50μ sections are possible. The cork and paper section is fixed to a slide treated with Mayer's albumen fixative, and the paraffin is removed by solution with xylene; the cork can be removed from the slide by means of dissecting needles, leaving the

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paper section intact. The section is then placed in a 95 per cent ethyl alcohol bath to remove the xylene, and mounted in diaphane.

Cork Mounts for Untreated Papers

For quick sectioning, when only the relative thickness of a coating or the depth of the penetration of printing ink is desired, it is possible to mount the paper strips in previously prepared corks without any pretreatment of the paper. In some instances where the mounting media, the alcohol, or the clearing agent would destroy the character of the paper (e.g., paraffin-coated or rubber-coated paper), it is necessary to use this method which should be carried out in the following manner. The paper to be sectioned is cut into ribbons as before. Two ribbons of non-moistureproof Cellophane (across the grain) are cut the same size as the strip of paper. With a razor blade, a slit (longitudinal with the long axis) is made half way through the cork. The paper is placed between the two Cellophane strips and inserted longitudinally in the slit. The projecting ends of the paper and Cellophane are trimmed flush with the ends of the cork, and the whole mounted in the microtome in the manner previously described under the cork method.

By means of a pointed glass rod, a tiny drop of sodium silicate is placed at each end of the waxed-paper section to prevent the separation of the section from the cork during the cutting operation. After the sodium silicate has dried, a section 15 μ thick is cut, floated on a drop of water on a slide, placed on a dissecting microscope and the cork and Cellophane removed from the paper section by means of two dissecting needles.

After the paper section has dried, it may be stained; in the case of paraffin papers a 0.25 per cent aqueous solution of crocein scarlet or permanent black ink is used. Within a few minutes most of the dye is removed from around the section and the remainder carefully blotted up with a piece of filter paper.

The surplus dye should be worked from the slide and removed from the section, after which it is mounted in water.

Celloidin-Cork Method

Experience has shown that when papers for cross sections are mounted in the standard paraffin mount or by the cork-paraffin method, the individual fibers shrink and the thickness of the section expands, therefore, if this is to be avoided or if the sections of papers are already relatively thin so that the mounting media, the alcohol or the clearing agent would destroy the character of the paper, the celloidin-cork method is the most advantageous.

The paper is cut into ribbons as for paraffin mounts, and dehydrated in acetone. The acetone is slowly heated until it boils and allowed to simmer until air bubbles cease to come from the paper. The strip is transferred from the acetone to a 12 per cent solution of cellulose nitrate (old films) in acetone. This transfer should be made rapidly before evaporation of the acetone in the paper can occur; the paper should be kept in the 12 per cent cellulose nitrate solution for one to two hours.

In the meantime, two rectangular pieces of cork are prepared by cutting a paraffin impregnated cork (size No. 1 is satisfactory) in half, and trimming the sides to form two rectangles each measuring about 15 by 8 by 2 mm. A coating of cellulose nitrate is spread on one face of each of the cork pieces and allowed to dry.

When the paper strip has soaked in the cellulose nitrate solution for one to two hours, it is removed; one end is clipped in a wooden clothespin and the paper is allowed to dry for 15 minutes. The strip is immersed in the cellulose nitrate solution a second time (slowly to avoid air bubbles) and again dried for 15 minutes; finally the strip is placed between the cellulose nitrate-treated faces of a cork and held in a clothespin clip while it dries for several hours. If it is allowed to dry overnight, the mount often becomes too hard and brittle, making sectioning difficult.

The celloidin-cork mount is placed in the microtome in the same manner as the paraffin mount and 15 μ sections are cut, using a camel's hair brush to reduce rolling. If the paper section splits during sectioning, this may be remedied by moistening the plane surface of the celloidin mount with a small amount of acetone just before cutting.

The section is floated on a small drop of water on the slide and with a little manipulation can be sufficiently flattened; most of the water may be removed with a blotter or filter paper. A drop or two of acetone is placed on the section, and as

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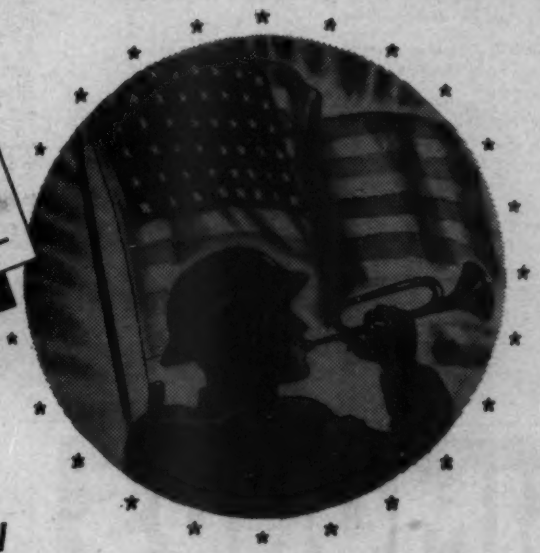

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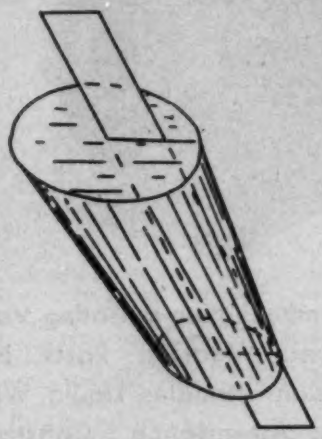

Fig. 5—Paper strip mounted in cork.

are simply dipped in the celloidin solution, dried for 15 minutes, and mounted between the previously prepared cork strips. However, the waxed-paper sections cannot be mounted in diaphane, as this would dissolve the paraffin; they can be mounted in water, glycerin, or sodium silicate.

Paper samples containing substances such as latex, which might be injured by ordinary embedding methods, can also be embedded by the method just described.

Lignins Isolated in the Presence of Butanol[1]

H. Y. CHARBONNIER

Union Bag and Paper Company

The earliest work on the treatment of wood with butanol is that reported by Hägglund and Urban (Hägglund, E., and Urban, H., Cellulosechem. 8:69-71, 1927; Hägglund, E., and Urban, H., Cellulosechem. 9:49-53, 1928). They carried out alcoholysis of wood with methyl, ethyl, isobutyl, and isoamyl alcohols, using concentrated hydrochloric acid as a catalyst.

Based on a patent by Kleinert and Tayenthal, Aronovsky and Gortner (Aronovsky, S. I., and Gortner, R. A., *Ind. Eng. Chem.* 28:1270-1276, 1936) in 1936 carried out experiments on the pulping properties of various alcohols and other organic solvents used in 1:1 dilution with water. They found that the most effective agent studied was n-butyl alcohol (butanol). When aspenwood was cooked with butanol-water mixtures, good pulping was obtained, but in the case of jack pine, the results were very poor. A patent was taken out by

(1) A portion of a thesis submitted in partial fulfillment of the requirements of The Institute of Paper Chemistry for the degree of Doctor of Philosophy from Lawrence College, Appleton, Wisconsin, June, 1941. This work was carried out under the direction of Friedrich Brauns.

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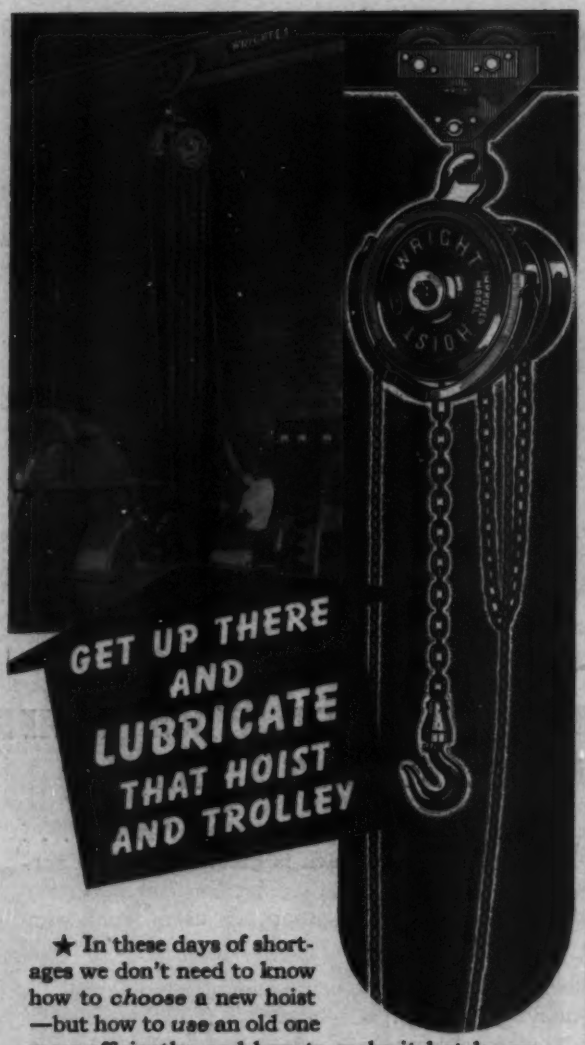

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Aronovsky (Aronovsky, S. I., U. S. patent 2,037,001, April 14, 1936), based on the above work, to cover the use of butanol as a pulping agent.

McMillen and coworkers (McMillen, J. M., Gortner, R. A., Schmitz, H., and Bailey, A. J., *Ind. Eng. Chem.* 30:1407-1409, 1938) continued the work of Aronovsky and Gortner to study further the difference observed in the butanol pulping of jack pine and aspen.

In the early part of 1940, Bailey (Bailey, A. J., *Paper Trade J.* 110. No. 1:29-34; No. 2:29-32, Jan. 4, 11, 1940: Bailey, A. J., *Pacific Pulp and Paper Ind.* 14, No. 3:24-27, March, 1940), who had co-operated with McMillen in the work mentioned above, reported additional work on the butanol-water cooking of jack pine and aspen. The author stated that an examination of the lignins isolated from neutral and alkaline cooks of jack pine revealed that they were "similar or identical."

Alkaline "accelerated" cooks were also made on aspen; in these the time for delignification was greatly reduced.

As a result of this work on alkaline butanol pulping, Bailey obtained a patent (Bailey, A. J., U. S. patent 2,166,540, July 18, 1939) somewhat similar in scope to that of Aronovsky, but providing for the use of sodium hydroxide.

Inasmuch as this investigation was primarily concerned with a study of lignins isolated in the presence of butanol, whereas the investigation of the pulping effect of butanol was of secondary importance, all of the wood meal was extracted thoroughly before cooking. This was necessary in order to prevent any possible contamination of the lignins with materials from the extractives of the original wood.

The cooks were carried out on jack pine (*Pinus banksiana Lambert*) heartwood selected from a 35-year-old tree, which had been seasoned for six months in an unbarked condition. The log was reduced to a meal passing a 10-mesh and held on a 60-mesh screen. The meal was successively extracted for 48 hours with ethanol, for 24 hours with an alcohol-benzene (1:2) mixture, and finally for 4 hours with hot water (85 C.). A quantitative determination of the extractives in the wood indicated the presence of 3.82 per cent alcohol-soluble, 0.30 per cent alcohol-benzene-soluble, and 2.23 per cent hot-water-soluble material. After it was reduced to 40-60 mesh, the extracted wood meal was analyzed, with the following results:

MeO in wood	5.53%
Pentosans in wood	11.70%
Lignin in wood	30.60%
MeO in lignin	15.82%

The cooks were carried out in a stainless steel autoclave of 5,750-cc. capacity.

The heating was carried out by an indirect manner with a wax bath.

Cook 1 was a buffered butanol-water cook and was carried out according to Bailey's Cook 10 (Bailey, A. J., *Paper Trade J.* 110 No. 1:29-34; No. 2:29-32, Jan. 4, 11, 1940), using monosodium phosphate and disodium phosphate for buffering.

A neutral butanol-water cook (Cook 2) was made to duplicate Bailey's Cook 8A (Bailey, A. J., *Paper Trade J.* 110, No.

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2:29-32, Jan. 4, 11, 1940) Cook 3 was carried out under the same conditions as Cook 2 except that the temperature was increased, and a moisture-free wood flour of 60 to 160-mesh was used.

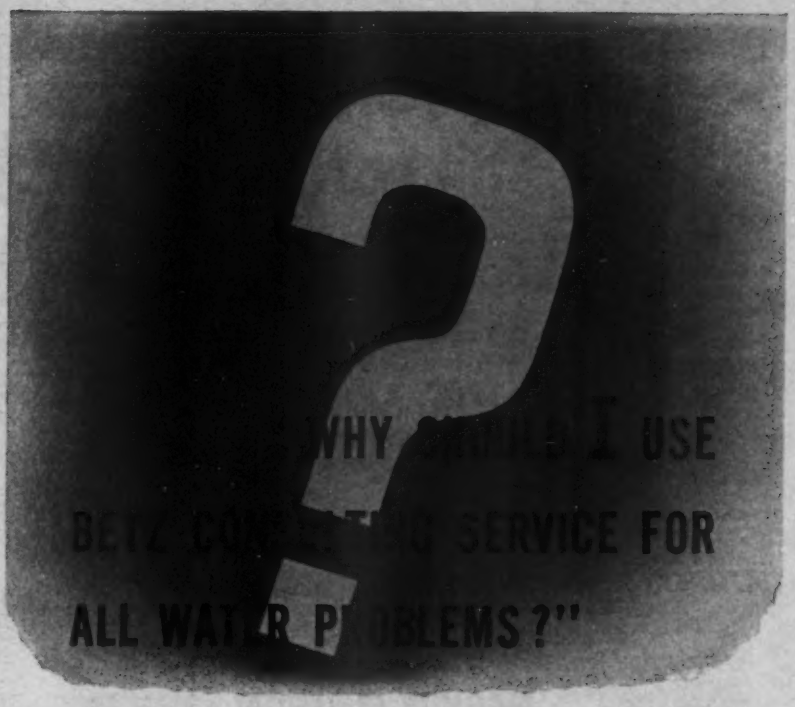
Cook 4 corresponded to Bailey's "alkaline accelerated" cook, and Cook 5 was the same as Cook 4 except that the butanol was replaced by dioxane.

In contrast to Bailey's findings, the results of Cooks 1 and 2 indicate that the actions of the buffered and unbuffered liquors were not identical. Almost twice as much material was removed in the unbuffered as in the buffered cook, and the *p*H of the final liquor was 4.1, compared with 6.1 for the buffered cook. This is in agreement with the work of Aronovsky and Gortner (Aronovsky, S. I., and Gortner, R. A., *Ind. Eng. Chem.* 28:1270-1276, 1936), who found that a slight acidity was favorable for producing better pulping. According to Bailey, the pressure in his cook at 158 C. was 132 psi. In Cooks 1 and 2, which were carried out at 158 C., the pressure was only 111 psi. An investigation of the temperature-pressure relationship of a 1:1 butanol-water mixture with standardized equipment revealed that the pressure of such a mixture at 158 C. was 106 psi and at 166 C. was 133 psi. Cook 3 was therefore carried out at 167 deg. C. in order to obtain the higher pressure, but even then the yield of 70.5 per cent is still considerably higher than the 47.8 per cent reported by Bailey.

The result of the alkali accelerated cook, in which a normal yield of pulp (44.3 per cent) with a lignin content of 5.2 per cent was obtained, is in good agreement with the result reported by Bailey for such a cook. It was considered advisable to make an alkaline cook wherein the use of butanol was completely eliminated. To do this and still maintain conditions comparable with those described in Cook 4 presented a problem, as there were three possibilities: (a) merely to eliminate the butanol and leave other conditions the same; (b) to replace the butanol with an equal volume of water; or (c) to replace the butanol with an inert, unreactive solvent, at least partly miscible with water. Accordingly, Cook 5 was made using conditions identical with those in Cook 4, but replacing the butanol with an equal volume of purified dioxane. The degree of pulping and lignin removal was almost the same as that obtained in the case of Cook 4 (the alkaline-butanol cook). This experiment demonstrates conclusively that the presence of butanol was not essential for pulping in the presence of alkali and, further, that the sodium hydroxide must have been the active pulping agent.

In order to compare the lignins isolated from these butanol-water cooks and a true butanol lignin, a true normal butanol lignin was prepared by methods similar to those used by Hägglund (Hägglund, E., and Urban, H., Cellulosechem. 8:69-71, 1927) for the preparation of the isobutyl alcohol-lignin condensation product. Modifications were introduced, based on the method of Brauns and Hibbert (Brauns, F. E., and Hibbert, H., *Can. J. Res. B.*, 13:28-34, 1935) for the preparation of methanol lignin.

The final purification of the various lig-



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nin preparations was based on the precipitation from its dioxane solution into anhydrous ethyl ether. This purification process was repeated until the products showed a constant methoxyl content.

The lignins of Cooks 1, 3, 4, and 6 were analyzed for their carbon and hydrogen content. The lignin preparations from the neutral butanol-water cook (3), from the alkaline butanol-water cook (4), and from the true butanol lignin condensation experiment (Cook 6) were further investigated by methylation with diazomethane in an anhydrous dioxane solution until a constant methoxyl content was obtained. The hydrolysis with 72 per cent sulphuric acid was carried out by the Forest Products Lab. method for the determination of lignin.

In interpreting the results of these studies, all calculations concerning constituent groups in the lignin will be based on the lignin building unit (with a molecular weight of 840), which was proposed by Brauns (Brauns, F. T., *J. Am. Chem. Soc.* 61:2120-2127, 1939; *Paper Trade J.*, 111, No. 14:33-39, Oct. 3, 1940) for native spruce lignin. This building unit has been found to possess four methoxyl groups, four hydroxyl groups, and an enolizable carbonyl group.

The "free butanol lignin" (from Cook 3) had a methoxyl content of 16.0 per cent. No comparison can be made with the methoxyl content of jack pine native lignin because it has not been isolated. However, this may be compared with the 15.8 per cent methoxyl content of the Klason lignin from jack pine wood meal.

The value of 14.8 per cent for the methoxyl content of the "total butanol lignin" from the "alkaline catalyzed" Cook 4 is in the range of values usually obtained for softwood alkali lignins.

On methylation of the true butanol lignin with diazomethane, the total alkoxyl content, expressed as methoxyl, was raised from 19.7 to 22.5 per cent. This increase corresponded very closely to the addition of one methoxyl group, thus providing evidence that only one phenolic hydroxyl group was methylated.

When "free butanol lignin" (Cook 3) was methylated with diazomethane, the methoxyl content increased from 16.0 to 22.4 per cent. This increase amounts to a little more than two methoxyl groups per unit, so that the "free butanol lignin" cannot be a true butanol lignin.

When "total butanol lignin" (Cook 4) was methylated, an even greater increase in methoxyl content was obtained. The increase from 14.8 to 24.4 per cent corresponds to an entrance of three new methoxyl groups per building unit and approaches the methoxyl content (24.8 per cent) found by Marshall (Marshall, H. B., Brauns, F. E., and Hibbert, H., *Can. J. Research B.* 13:103-113, 1935) for alkali lignin B. This indicates that in an alkaline butanol cook another phenolic hydroxyl is uncovered or made available and that "total butanol lignin" is identical with alkali lignin.

When methanol spruce lignin is subjected to a treatment with 72 per cent sulphuric acid, the two acetal-linked methoxyl groups are split off, whereas the remaining four methoxyl groups existing in true ether linkage are unaffected. Samples of the three lignins were subjected to such a treatment, the conditions adopted being identical with those used in the lignin determinations. The residues were tested for methoxyl contents.

In the case of the true butanol lignin, an unmistakable odor of butyl alcohol could be noticed when the 72 per cent acid was added. There was a decrease in the alkoxyl content from 19.7 to 16.3 per cent due to the removal of the butoxyl group. No odor could be detected from the other two lignins.

The action of 72 per cent sulphuric acid on the "total butanol lignin" gave a residue in which the methoxyl content had increased from 14.8 to 15.5 per cent. If

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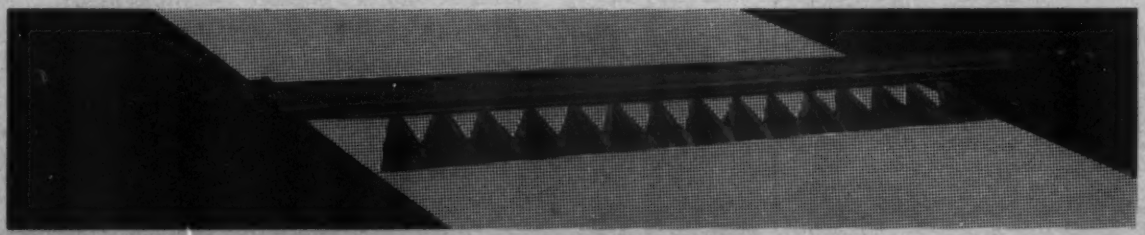

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butoxyl groups had been present, there should have been a decrease in the methoxyl content after treatment. The loss of 16.4 per cent of the "total butanol lignin" on the sulphuric acid treatment is not surprising as lignin is degraded in the alkaline cook and rendered partly soluble by the 72 per cent sulphuric acid.

The methoxyl content of the "free butanol lignin" was practically unchanged on treatment with 72 per cent sulphuric acid. The slight decrease may be considered to be within the experimental error in the methoxyl determination on an amorphous, high molecular compound such as lignin, and therefore it is difficult to say that it could be attributed to the loss of butoxyl groups. Even if this decrease were caused by the loss of butoxyl groups, the magnitude of the decrease would correspond to only one butoxyl group in every 10 or 15 lignin-building units, rather than two butoxyl groups in each unit. Therefore, this "free butanol lignin" cannot be considered a true butanol lignin or lignin-butanol condensation product.

The Colloidal and Physical Phenomena Relating to Freeness and Stock Drainage[1]

ROBERT W. REED

Eastman Kodak Company

The property of freeness has been specifically defined many times, usually in terms suited to a particular freeness tester. In this paper an attempt is made to describe freeness with respect to drainage of stock on a fourdrinier wire. Since existing testers have faults inherent in the instruments in the light of this definition of freeness, the design of an instrument which simulates drainage of stock on a wire is demanded.

Thus, this study has a three-fold purpose: (1) The development of an instrument for the study of drainage; (2) a study of existing testers; (3) an investigation of some of the factors affecting drainage.

The design of the drainage tester consisted of three steps: (1) The design of an instrument with a low resistance to drainage and with a variable suction pressure acting under the wire; (2) the design of an optical system to measure the time of drainage photoelectrically under testing conditions which duplicate machine conditions; and (3) the design of an electrical system to record automatically the short time of drainage under these conditions.

A schematic sketch of the drainage instrument is given in Figure 1. The body of the instrument is made up of a cylinder closed at the bottom and attached by an annular ring to a shorter inner cylinder at the top. Water seals the lower end of the inner cylinder and forms an airtight chamber. A wire mounted on a removable annulus covers the top of the inner cylinder. The cylindrical upper section, which is removable to allow the wire to be cleaned, is placed above the wire across the inner cylinder. A mercury seal prevents leakage of the stock suspension between the upper and lower sections.

A piston, adjusted to the density of water and, hence, behaving dynamically as a volume of water equal to its own volume, fits inside the inner cylinder. Air pressure, applied in the outer cylinder, forces the piston to move with the column of water up the inner cylinder and to form a seal against the rubber gasket directly under the wire. A slight excess pressure is applied to offset the head caused by the stock which is to be added to the upper section. The piston prevents the stock mixture from diffusing through the wire and mixing with the water below, and insures streamline flow after drainage has started.

With the piston in position, the sample is placed in the upper section and diluted to the correct head above the wire. As the air outlet valve is opened and the air pressure released, the water leg beneath the wire immediately becomes a suction leg acting to cause drainage. The stock suspension above the wire acts as a positive head. The sum of the two or the composite head is opposed by the resistance of the pulp to drainage of water through it, and by the inertial force.

All the instrumental variables can be readily changed. The pressure head, sample weight, and temperature are easily adjusted. The wires are detachable and can be interchanged. The suction head can be varied simply by changing the water level in the outer cylinder.

The optical system, which was made in

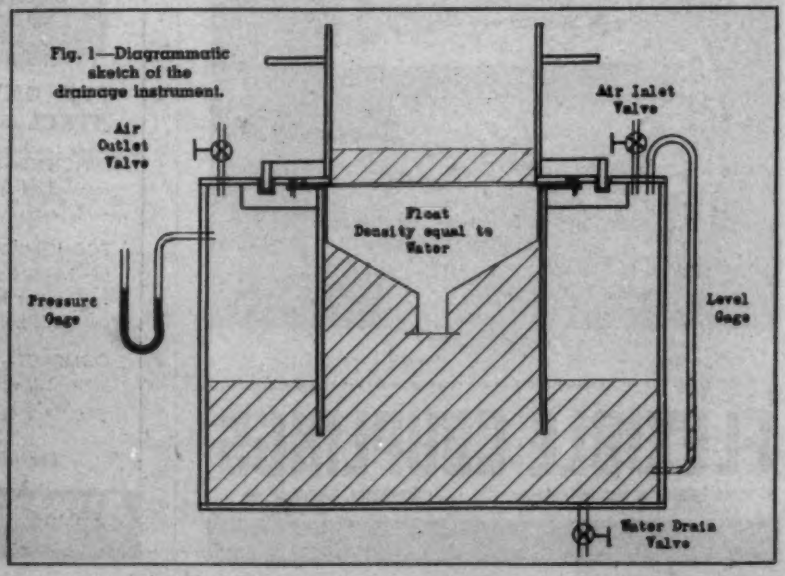

Fig. 1—Diagrammatic sketch of the drainage instrument.

(1) A portion of a thesis submitted in partial fulfillment of the requirements of The Institute of Paper Chemistry for the degree of Doctor of Philosophy from Lawrence College, Appleton, Wisconsin, June, 1941. This work was carried out under the direction of J. A. Van den Akker.

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The specularly reflected light is reflected directly back toward the light source and is partially reflected off the glass to the photocell. Thus the photocell "sees" the sudden drop in specular reflection as the fibers break through the water surface. The change in the amplified photocurrent operates a relay which stops the electric timers and thus automatically records the time of drainage.

Instrumentally the apparatus allowed the duplication of machine conditions for all variables but one—the passage of fines through the wire. The head, sheet weight, suction head, wire size, temperature, time of drainage, consistency, etc., can all be kept within the papermaking range. The amount of fines passed through the wire, however, was found to be far below machine conditions. To duplicate the amount of fines passed through a 70-mesh wire on a paper machine it was necessary to use a 20-mesh wire in the instrument. Furthermore, the nature of the fines passed by the instrument and by the machine offered. The high fines loss through the relatively fine wire of the machine and the difference in the nature of these fines from those obtained on the instrument can be attributed to four possible factors on the machine: the effect of the shake; the high suction on the machine; the downward velocity due to the head behind the slice; and the washing-out effect of water carried back to the under side of the wire by the table rolls.

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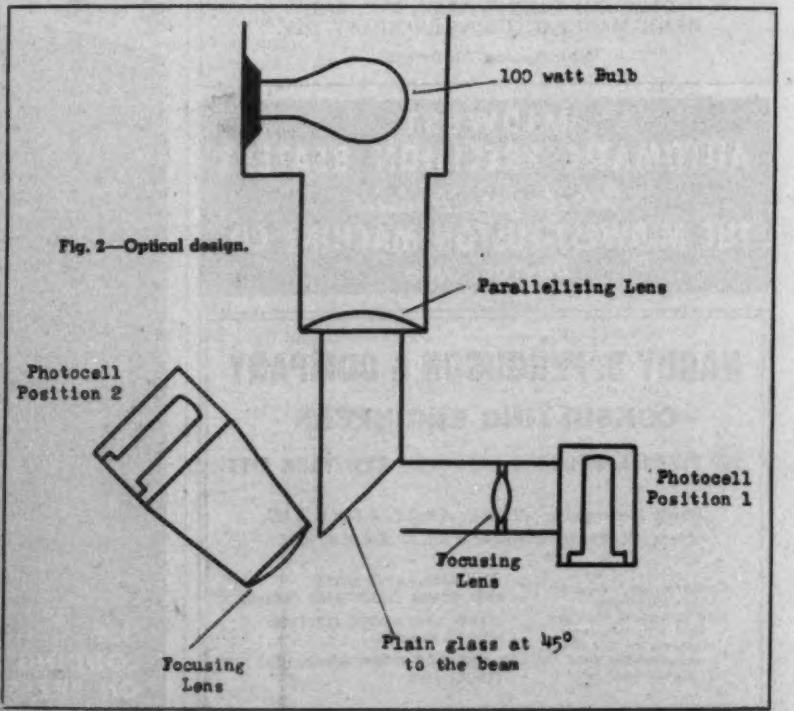

Fig. 2—Optical design.

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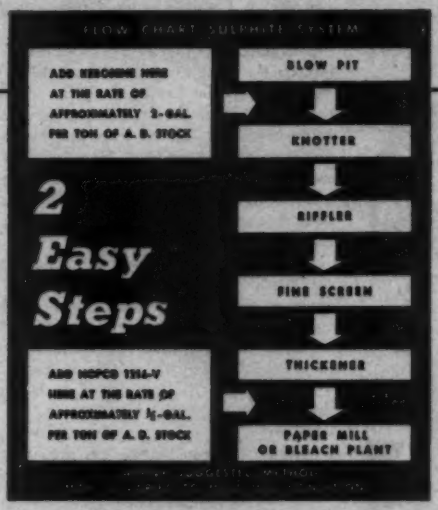
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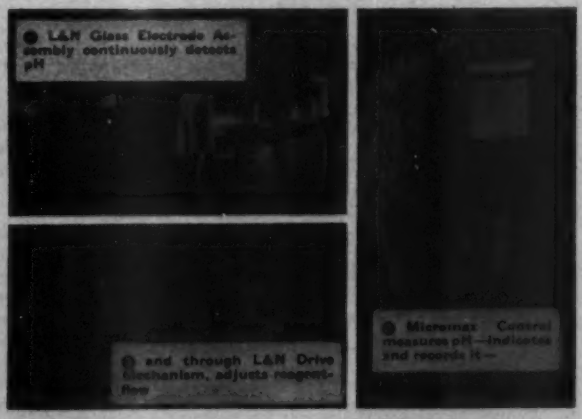
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After the end point had been selected and the photoelectric system modified to the point of greatest sensitivity, the actual testing technique had to be developed. Using this procedure, good reproducibility is obtained.

Numerous interconversions of freeness scales for the different testers have been made by other workers. These conversion charts, however, are not absolute. In many cases an actual inversion of results for two pulps has been shown to occur with different testers. That is, one pulp may appear freer than another on one tester and yet may appear to be the slower pulp on a second tester.

To check the effect of differences in the testing procedures of the different testers, the following tests were run on a pair of groundwood and sulphite pulps which showed freeness inversion between testers: (1) all regular freeness testers, (2) Williams test at 20 and 25 C., (3) Williams test at standard weight per unit area and at the weight per unit area of the Schopper-Riegler test, (4) Williams test using total head equal to that of the Schopper-Riegler test, (5) Williams test under complete Schopper-Riegler conditions, and (6) Schopper-Riegler test using the same weight per unit area as the Williams procedure. The data are tabulated in Table III.

The drainage of water from fibers felting on a wire is affected by a great many variables, which may be divided into two classes: machine or experimental variables, and stock or furnish variables. The former class includes such factors as temperature, wire size, head above the wire, effective suction head, sheet weight, and consistency. Among the stock variables are the degree and nature of refining, fiber length, fiber width, fibrillation of the fibers, distribution of fines, wet compressibility of the pulp pad, the hydration (either chemical or colloidal) of the stock, and the effect of added materials.

The effect of both the head above the wire and the suction leg below the wire was investigated for one pulp which had been refined to different degrees.

The differences between the relative compressibilities of different types of pulps were also investigated.

The fact that the relative drainage time of different pulp changes with head is of utmost importance. There can be no universal interconversion between the different freeness scales because the testers have different heads acting to cause drainage. Nor can any of the existing testers be used to prophesy the relative drainage rates of different stocks upon the paper machine. Although the total head on the machine (including both the head above the wire and the effective suction head) is unknown, it is probably not the same as that employed in any of the testers. However, if the same furnish is used, any of the existing testers would be expected to give a relative measure of the rate of drainage on the machine.

To obtain a correct relative scale of drainage time, it is necessary to determine the drainage time under conditions of head equal to those of the paper machine. This requires the use of an instrument similar to the one developed in this investigation.

This study indicated that the change in drainage time with temperature can be considered, for all practical purposes, proportional to the change in the viscosity of water. This observation corroborates that of Davis (Davis, D. S., *Paper Trade J.* 91, No. 21:49-50, Nov. 20, 1930). The same effect was obtained for the entire scale of drainage time.

The instrument developed for this investigation is not suited for a study of the effect on drainage time of a variation in the weight of pulp used in the instrument.

Studies of the effect of sample weight on drainage time were carried out on both the British sheet machine and the Williams tester. The drainage time was proportional not to the weight alone but rather to the sample weight minus a constant. The ratio of the constants for the two testers was that of the areas of the wire surfaces. The statement seems justified that a certain thickness of pulp pad must be obtained before capillary flow takes place. This necessary pad thickness is equivalent to about 0.25 g. per sq. cm. This agrees with the data obtained by Sankey (Sankey, C. A., *Pulp Paper Mag. Can.* 35:74-81, 1934) and Campbell (Campbell, W. Boyd, Forest Products Labs. Canada, Pulp Paper Lab., *Quarterly Rev.* No. 9:32-36, 1932) on the British sheet machine.

Four different wire meshes were used in the laboratory instrument: 50, 60, 70, and 80. In all cases the effect on the drainage time of varying the wire mesh was small.

Average fiber length per se has only a small effect upon drainage time; this in-

TABLE III—Effect of Varying Testing Conditions on Inversion of Freeness

Tester	Groundwood Pulp	Sulphite Pulp
Schopper-Riegler (S.-R.)	253 cc.	283 cc.
Green	52 cc.	71 cc.
Canadian	64 cc.	69 cc.
British drainage time	30 sec.	60 sec.
Williams		
Standard	483 sec.	512 sec.
20 C.	513 sec.	636 sec.
S.-R. areal density	161 sec.	182 sec.
S.-R. head	119 sec.	106 sec.
S.-R. conditions of head and areal density	70 sec.	70 sec.
S.-R. areal density equal to that of Williams	107 cc.	130 cc.

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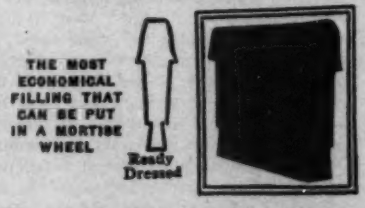
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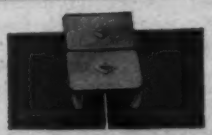

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creased with a decrease in fiber length but not to a degree which has any importance in papermaking. This duplicates the findings of Guild and Mills (Guild, E. J., and Mills, S., *Proc. Tech. Sect.*, Paper Makers' Assoc. Gt. Brit. Ireland 5, part 1:63-73, 78-81, 1924).

On the other hand, samples of different fiber length obtained by fractionation of the pulp showed an apparently large change of drainage time with fiber length.

Since the fibrillation of a pulp has been thought to be of decided importance in the drainage behavior of a pulp, an investigation of fibrillation and its effect on drainage was made. For this study the method developed by Clark (Clark, James d'A., Unpublished work, The Institute of Paper Chemistry, 1941) for the estimation of the surface area of pulp was used.

The data indicate that drainage time increases with an increase in the degree of fibrillation. However, an increase in drainage time cannot be accounted for by fibrillation alone.

Known amounts of electrolytes were added to samples of beaten pulp, allowed to stand a given period, and the drainage times determined. In the light of accepted colloidal theory as to the relative effect of the different ions on the charge on the fiber and on the colloidal hydration of the fiber and of the accepted theories of adsorption, the data obtained were interpreted to indicate that both the charge on the fiber and the colloidal hydration of the fiber are of utmost importance in drainage behavior of a pulp.

A study of the effect of the addition of dyestuff to a pulp upon its drainage characteristics was made. When used in substantial weights, a basic dye was shown to free the stock, a substantive dye seemed to slow the stock, and an acid dye had little effect upon the drainage time.

Colloidal hydration is believed to be an important consideration in the drainage behavior of a pulp. Decrease of the hydration of a fiber by the addition of tannic acid (a strong dehydrating agent) and by boiling (which is thought to cause an irreversible decrease in the hydration of cellulose) indicated that the hydration of the fibers had an important effect upon the drainage behavior of a pulp. As in the case of fibrillation, the entire development of slowness cannot be attributed to hydration alone.

Sewed Closures for Paper Bags

J. S. SIMPSON,[1] G. R. BEEBE,[1] and A. W. KOON[2]

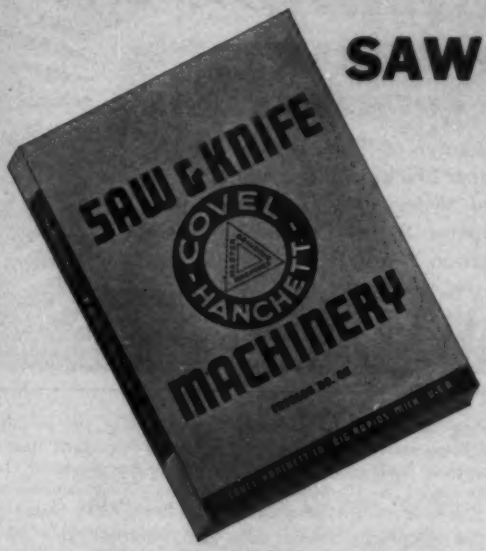
Paper bags are commonly closed by pasting, stapling, or sewing. Sewing is resorted to when a tough closure is essential. Cotton sewing thread is usual, because it is fine and flexible, and accommodates itself to the rigors of modern high-speed sewing. Cement, sugar, fertilizer, chemicals have come to be handled in paper bags sewed with cotton, but cotton closures suffered one serious frailty; in certain uses the thread introduced a foreign substance into processes which could not tolerate such a contaminant.

(1) Columbian Rope Company; (2) Staff Chemist, Columbian Rope Company.

For instance, bags of sugar used in baking and in confectionery manufacture often are carelessly opened. Scraps of the paper bag may be torn off and enter the batch, causing but little harm, because the paper disintegrates and loses its identity. Scraps of cotton thread present a different problem. They appear unchanged in the confection or baked goods, and are always taken to be "hair" by the ultimate consumer. Food users have a horror of hair in victuals exceeded only by their aversion to worms and bugs, so this is a risk which the manufacturer dares not run.

The answer to this problem, naturally, was to sew with a water-dispersible thread. The next thing was to implement this solution with a practical material, and paper was adopted. Bags sewed with paper were found to work just right, for the paper thread disappeared into any watery mixture. It seemed also that other important uses required the same quality. Bags of alum and other papermaking chemicals, if closed with paper thread, could be dropped in the beater without opening. The bag and thread became just so much paper stock. Cotton twine was undesirable because it contaminated the stock permanently. Again, paper bags for any purpose at all attained new and enhanced value as waste paper for repulping.

Sewing thread spun from paper thus provided the primary quality sought—that of



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water dispersibility. However, there remained the considerable obstacle that the papers we knew failed to function satisfactorily in high-speed sewing machines.

We have discovered no paper ideally meeting our needs at a bearable cost. Several papers satisfy some of the requirements. For example, facial tissue is substantially unsized and suitably soft and is reasonably cheap, but it has little strength even when properly spun. Carbon paper base is a closer approach, and mimeograph, especially mimeo-backing, is long fibered and of relatively free stock, but these are not notably unidirectional.

It is not even certain that an all wood fiber sheet will suffice. We have had to employ papers containing at least a portion of manila fibers, although long fibered, highly purified wood pulp has shown some promise. Notwithstanding economic and technical obstacles, we have succeeded in making and marketing a limited amount of spun paper sewing thread for bag closures, and the product has done the required job.

Our program of development work for cordage has included investigations of synthetic fibers and of resins and plastics generally. Our preoccupation with such matters has brought us deviously to the idea of using a water-dispersible, filament forming polymer in a sewing thread.

Polyvinyl alcohol is to be had, still very costly, but strong, flexible, filament forming, and above all water-dispersible.

It seems likely that polyvinyl alcohol threads actually are stronger than necessary and will stand modification. Starch, glue, glycerol, the glycols, and certain organic phosphates and lactates are suitable extenders and modifiers. Most of them are cheaper than polyvinyl alcohol and thus permit savings.

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The Influence of Certain Variables in Forming Brightness Handsheets

CHARLES M. KOON[1] and
DONALD D. NIEMEYER[2]

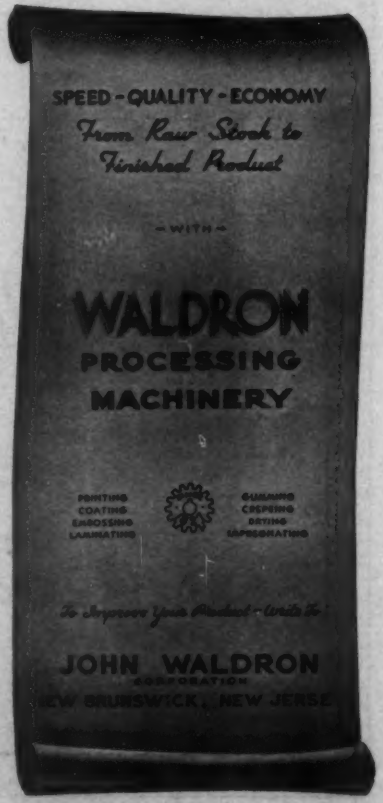
Although the brightness of pulp is one of its important properties, and although the accurate measurement of this property is particularly essential in view of recent directives which specify brightness ceilings, the literature contains few references which relate specifically to the determination of pulp brightness. The principal contributors are Foote (Foote, W. J., Tech. Assoc. Papers 22:397, 1939; *Paper Trade J.* 109, No. 25:31-38, Dec. 21, 1939) and Day (Day, G. A., *Paper Mill* 62, No. 41:14, 19-20, Oct. 14, 1939) whose excellent work has established the scientific and technical basis for the determination.

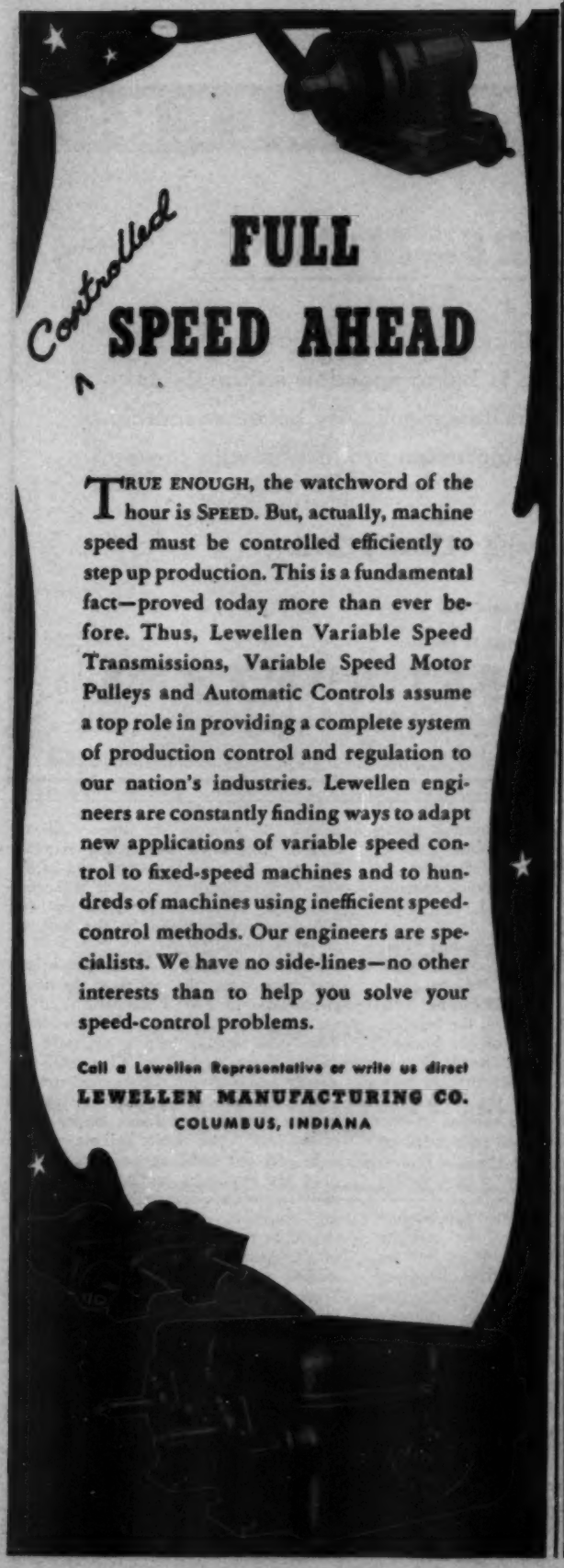
The present study was undertaken for the purpose of improving the existing Institute method (See also TAPPI suggested method T 217 sm-41, *Paper Tr. J.* 113, No. 26: 39-42, Dec. 25, 1941), particularly with regard to those factors which would be important in the application of the method to pulps of varying history and by laboratories widely separated from each other.

Four samples of water were obtained from mills in the vicinity. These samples were evaluated for color by TAPPI Standard T 620m. The same samples and a sample of re-distilled water prepared at the Institute were employed also in the preparation of brightness handsheets by the Institute method. None of the water samples, except the distilled and re-distilled waters, appeared to be suitable for the preparation of brightness handsheets for accurate evaluation.

Some data obtained during a research project had indicated that the washing of a pulp specimen when formed into a brightness sheet on the British sheet mold may be significant, particularly in view of

(1) Research Associate, (2) Research Assistant, The Institute of Paper Chemistry.





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the high dilution which this method involves. Accordingly, three unbleached sulphite pulps, representing typical commercial operation and obtained in wet lap form, were evaluated by the Institute method before and after very thorough washing with distilled water. Care was taken to avoid loss of fines in the washing operation.

Since thorough washing failed to improve the brightness of any of the three pulps, it would appear that normal commercial washing plus the rinsing action of the dilution water employed in the sheet-forming method is sufficient to remove all easily soluble light-absorbing compounds. The decrease in brightness of two of the pulps might have been due to effects of the oxygen dissolved in the distilled water. It is well known that unbleached sulphite pulps are darkened by mild oxidation.

Eighteen pulps, covering a wide brightness range, were formed into handsheets by the Institute method, employing the Büchner funnel, and by a method which varied only in using the British sheet mold.

The average uniformity of brightness readings for a single specimen was approximately the same for the two sheet-forming methods.

Foote's dissertation (Foote, W. J., Unpublished work, The Institute of Paper Chemistry, June, 1938) shows that the pressing step of the sheetmaking operation has a small but definite effect upon reflectivity (the reflectance of an opaque pad).

Foote explains that the higher forming pressure permits the establishment of more interfiber contacts in the finished sheet, which leads to a decrease in the scattering coefficient and a decrease in reflectivity, in accordance with the Kubelka-Munk formula (Kubelka, P., and Munk, F., *Z. Tech. Physik.* 12:593-601, 1931).

Foote (Foote, W. J., Unpublished work, The Institute of Paper Chemistry, June, 1938) obtained data which indicate a decrease in reflectivity with increasing basis weight. Data which represent the Institute method involving the use of the Büchner funnel, indicate a similar trend; British handsheet data however are divided with regard to the direction of the effect.

It would seem that the exercise of reasonable care in weighing the pulp specimen from which the handsheets are to be formed would preclude any important basis weight effect.

When the same three filter papers were used both for filtering and for covering the test sheet, the difference in results from those obtained by the standard procedure were of less degree. Since the drainage rates associated with the substituted filter papers were definitely slower, it appeared that this factor might have been responsible. Such behavior might be attributed to a lessening in degree of washing, which would increase the absorption coefficient, or to a greater compactness of the damp sheet, which would decrease its scattering coefficient.

In order to study the influence of the latter factor; i.e., the effect of the compactness of the handsheet, the specific volume of selected handsheets was determined. In view of the absence of any uniform correlation among the factors—drainage time, specific volume, and brightness—one is forced to conclude that whatever effects do exist are so small that they are easily overshadowed by the influence of other variables.

In an earlier method for preparing brightness handsheets, the polished chromium-plated disks of TAPPI Standard T 205 m were employed. Since the elimination of these disks would help to increase the utility of the method for those mills not already equipped with the standard strength sheet-forming equipment, a few experiments were performed to determine the feasibility of the idea. The results indicate that the disks did not have any consistent effect upon the brightness readings, and accordingly they were eliminated from the pressing operation in subsequent tests. It should be remarked, however, that the use of the disks is still preferable for special studies which involve determining the brightness of beaten pulps; otherwise, the shrinkage which accompanies the drying of the handsheet causes it to pull away from the rings, and cockling results.

In an analogous fashion, the specification which calls for the application of suction while the stock suspension is being poured into the Büchner funnel was established. The data indicate that numerically it is relatively unimportant; however, it has been found desirable in practice to apply suction during this step in order to insure that the filter paper is firmly seated in the funnel at all times.

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NEW EQUIPMENT AND SUPPLIES

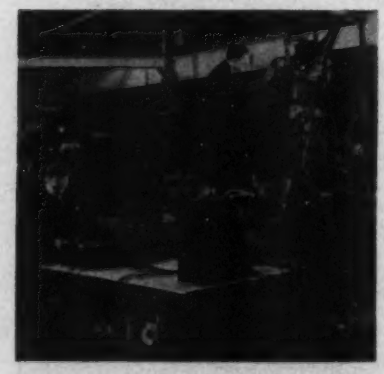
Blackout Bulb

Wabash Appliance Corp., 335 Carroll St., Brooklyn, N. Y., has announced a 25-watt bulb which has been designed for blackout lighting. The bulb is lined with

silver and is coated on the outside with a black silicate coating up to the extreme lighting end which is deep blue. Projecting a soft beam of blue light downward, the manufacturer states that the bulb is safe for indoor visibility during blackouts.

Tool for Studying Governor Performance

Westinghouse Research Laboratories, East Pittsburgh, Pa., have developed a means by which the operation of the component parts of governors can be analyzed. It includes



the use of several new instruments which are placed at strategic spots about the control system and which relay their information electrically to an oscillograph for simultaneous record. One of these instruments is a valve travel recorder which translates the movement of the valve into a proportional electrical voltage by a magnetic strain gauge, recording accurately as little as fifty-thousandths of an inch of travel or a sudden full travel of eight inches. Other instruments simultaneously record the several oil pressures in the complete control system. Here a bellows of another strain gauge amplifies tiny pressure changes and sends a proportional voltage change to the oscillograph. This device records variations in pressure lasting but a sixtieth of a second. This equipment may be used to study the behavior of all types of governors, hydraulic or flyball, and to throw light on many questions of turbine-generator and power system performance.

Portable Water Purifying Unit

Technicraft Engineering Co., 5610 So. Soto St., Los Angeles, Calif., has developed an electrically-operated portable automatic water purifying unit *(Sterozone Model B)* for use in the field and elsewhere where a supply of pure drinking water or pure water for other purposes may be essential. The unit has a capacity in excess of 1,200 gallons per hour; can be installed on any suitable

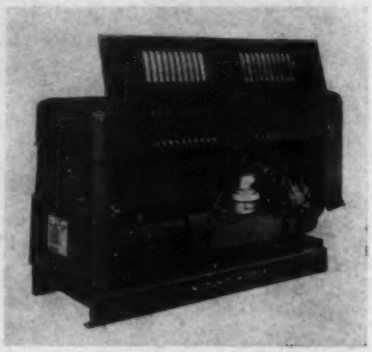
tank or water storage container (a 250-gallon bag is supplied for field use); and is powered by current supplied from a 110 volt, 50-60 cycle outlet or by a portable gasoline-electric generator. In operation, ozone is generated by silent electrical discharge maintained at 11,000 volts. Injected directly into the water passing through the unit, the ozone oxidizes bacterial contamination and produces pure, colorless, odorless, tasteless water.

Drying Agent for Liquids and Gases

A granular drying agent for liquids and gases, designated as *Florite Desicant*, has been placed on the market by the Floridin Co., 185 Liberty St., Warren, Pa. This product is stable, non-corrosive, and non-poisonous. It absorbs water in an amount equal to 4 to 20 per cent of its weight, depending on the application, and is regenerated by heating to 300-350 Fahr.

Engine-Driven Arc Welder

The Lincoln Electric Co., Cleveland, Ohio, has announced a new engine-driven arc welder of 200-ampere size for the welding of light gauge metal, for the repair of cast iron parts, for the fabrication of machine parts and structures of many kinds, and for



hardfacing of worn parts. Of direct current type, the manufacturer states that it can weld effectively practically all metals and alloys with bare or shielded arc type electrodes or with carbon arc where desirable. The welder is powered by a Hercules industrial engine equipped with centrifugal type governor, high tension magneto with impulse starter coupling, and oil bath air cleaner. The net weight of the unit (a stationary model) is 890 lb.; its dimensions, 56 in. by 37 in. by 20 in.

Rotary Type Control Switch

Roller-Smith Co., Bethlehem, Pa., has announced the development of a double-break, direct-acting, rotary switch for the control of circuit breakers. This switch, insulated for 600 volts and having a continuous current carrying capacity of 10 amperes, is built up of units, each unit consisting of

two single break contacts connected in series by means of a jumper. A spring return arrangement causes the switch to return to the "off" position upon release of the grip-type handle, thus opening the contacts. A red and green target arrangement permits an observer to determine the last position of the switch or if the breaker was tripped on some fault.

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Eye Shade Which Magnifies

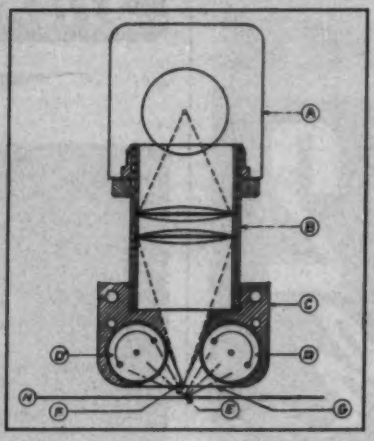
Edroy Products Co., 480 Lexington Ave., New York, N. Y., has announced the development of an eye shade which is equipped with a pair of five power magnifying lenses. When not using the lenses, the wearer can

look beneath the shade with normal vision. The eye shade, known as the *Magni-Focuser Eye-Shade*, is made of plastic. It was designed for the use of mechanics, chemists, and others whose work might permit them to employ such a shade to advantage.

Photoelectric Amplifying System Auxiliary

United Cinephone Corp., Torrington, Conn., has announced a new product, the *Scanner*, for use wherever photoelectric control is desired from a reflecting surface two inches or less distant from the unit. It consists of a light source and two photo-tubes in a single, compact housing, ready for attachment to any sensitive photoelectric amplifying system.

In operation, light from the bulb mounted in metal housing (A) passes through a double converging lens in lens barrel (B), then through aperture (F). A highly concentrated spot of light strikes the surface being scanned (H) and is reflected back



into the photo-tubes D and D1. The response of the photo-tubes to this change in reflected light intensity is transmitted through co-axial cable to a remote amplifier, making possible the control of auxiliary electrical devices. Casing A measures only 3½ in. by 2¼ in. by 2¼ in.; casing C, only 2½ in. by 2½ in. by 1½ in.

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Fluorescent Lighting Equipment

Benjamin Electric Mfg. Co., Des Plaines, Ill., has announced the development of lighting equipment which makes use of rectified fluorescent lamps. Designated as the new

"RF" Lighting Equipment, the line includes both single or twin lamp types in open end models of special porcelain enamel. The units have a reflection factor of 79 per cent; are 65½ in. long; and require 85 watt "RF" lamps.

Protective Covering for Wall Surfaces

The Bergonize Co., Merchandise Mart, Chicago, has announced a protective covering for wall surfaces which has been developed for use in plants, offices and elsewhere where easy cleaning of painted walls is desirable. The product provides a clear, transparent, flat film that prevents dust, dirt and grime from penetrating the pores of the paint. Odorless, it dries flat within 20 minutes at 70 Fahr., one gallon covering approximately 1,500 sq. ft. and application being made upon a newly painted or cleaned wall. The protective covering is removed from the painted surface by application of clear water with a sponge or rag, taking with it the accumulation of dirt and leaving the surface in a paint-clean condition.

Portable Hoist

Whiting Corp., Harvey, Ill., has announced a new portable hoist of simplified design. The hoist, known as the *Aero Hoist*, has a single upright mast equipped with riser steps and adjustable platform. A chain

hoist raises and lowers the work or supports it at any desired height. An extension keeps the hand chain safely away from the load; and a brake locks the hoist in position. The unit is available in one and two ton models.

New Motor Line

Allis-Chalmers Mfg. Co., Milwaukee, Wis., has announced a new line of motors which incorporate in their design what is designated as "Safety-Circle" protection. This protection is in the form of a wide, solid rib—integrally cast as part of the motor frame—which forms an unbroken circle around the stator. Among the features cited by the manufacturer for the individual mo-

tor of this line are the following: one-piece cast frame and cast end-shields, more liberal use of electrical materials, improved bearing design, additional cross strength in stator, rotor keyed to shaft, outer surface of rotor turned for smoothness and accurate air gap, oil drains at bottoms of bearings, removable end pieces, and large conduit box for wiring.

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Layne-Western Company	Kansas City, Mo.
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International Water Supply, Ltd.	London, Ont.

TECHNICAL DEVELOPMENTS

These abstracts are of the latest developments found in the American and foreign press.

Zein Solvents

Zein dispersions, some of which may be used in paper coatings could be prepared as 20% solvents in di- and triethylene glycol and di-propylene glycol which remained clear for 2 years at 27 C. However a sol in 85 per cent ethyl alcohol gelled within approximately a month. The use of zein solutions depends on the volatility of the solvent and on the critical peptization temperature. Primary solvents are:—hydroxy compounds, amides, amines, and acids. C. D. Evans and R. H. Manley. Ind. Eng. Chem., 33, No. 11,1411-7 (1941).

Black Liquor Studies

This is a resumé outlining possibilities for obtaining better combustion of black liquor by preoxidation, for obtaining fuel from the evaporators, for increasing tall oil soap yields, etc. During crises, sulphate pulp mills, which otherwise might remain idle could be employed to obtain motor fuel, the process being based on chip impregnation with liquor followed by dry distillation. The author states that this conversion of the pulp mill into an oil manufacturing plant is not expensive. However the article furnishes no new experimental data. H. Bergström. Svensk Papperstidn. 44, No. 15, 344 (1941); through Bulletin Institute Paper Chem., 12, 95 (1941).

Cellulose in Whole Cotton and Southern Woods

A study carried out in North Carolina. In the case of the cotton plant, the lint is almost pure cellulose. The cusps and the stems contain much lower amounts, and the lowest of all is contained in the seeds. In terms of alpha cellulose, 60 per cent of the whole amount found in the plant comes from the lint, and about 15 per cent each from the cusps and from the stems. The authors used the following rather drastic method for "total cellulose" determination. One hundred grams of material was pulped with 1000 cc. of 5 per cent aqueous HNO_3 solution for 3-10 hours (depending on the resistance to delignification). After filtering and washing, the residue was stirred with 500 cc. of 2 per cent NaOH and boiled for ¾ hour. The washed, colored pulps were bleached by seeping in a solution containing 3 g. of bleaching powder per 500 cc. water. Subsequent washing was followed by drying. The residue was termed "total cellulose." While this method gives much lower yields than those obtained by the Forest Products Laboratories, the per cent of alpha (calculated in the original material) is not so very different from that obtained by the usual laboratory methods. Besides data on the cotton plant, the authors report cellulose and alpha-cellulose analyses for the following woods: *Albizzia lebbek*, American holly, black walnut, dogwood, hackberry, Canadian hemlock, honey locust, persimmon, sweet bay, tulip tree, white ash, butternut, white wood, and white rhododendron. The total cellulose yields varied from about 34-47 per cent and the alpha-cellulose yield from 26-36 per cent. The former figures are much lower than those previously reported for American woods, but this is due, it seems, to the more drastic methods employed by the present authors. Wen-Hsien Wan Chen and Frank K. Cameron. Ind. Eng. Chem. 34, No. 2, 224-5 (1942).

Carboxymethylcellulose

This substance and at least one of its salts give promise of a number of commercial applications. The dissociation constant indicates that the cellulose derivative is a fairly strong acid. The lead, mercury, aluminum, copper, nickel, and ferric salts are insoluble in water. The sodium salt of carboxymethylcellulose, in which about 1/3 of the hydroxyl groups are substituted, is water soluble and is a fluffy, hygroscopic solid. The *p*H of its solutions affects the viscosity, the maximum being reached at *p*H 6-9. Viscosity curves rise rapidly with increasing concentration. On heating followed by cooling, the viscosity falls. Degradation evidently sets in between 40 and 50 deg. While the sodium salt is insoluble in organic liquids it will be miscible in solution with 45 per cent ethanol and 40 per cent acetone. It serves to stabilize emulsions of water and a range of oils. It may be used in foodstuffs since it is non-toxic. C. J. Brown and A. A. Houghton. J. Soc. Chem. Ind. 60, No. 10, 254-8 (1941) through Bull. Inst. Paper Chem. 12, No. 5, 137 (1942).

Resistance of Pine Wood

A pine post which had been under salt water for over 800 years at Trodheim, was analyzed chemically. Four samples which varied somewhat were taken. Their composition with the exception of a high ash content, and concomitant lower cellulose and lignin, fell within the range found for normal, fresh pine wood. The data were as follows: ash 5.6-7 per cent; cellulose (by Holmberg's method) 36-41.3 per cent; lignin 24.1-25.2 per cent; thioglycollic acid lignin (Holmberg) 26 per cent. The latter lignin fraction on isolation and analysis showed a normal composition. S. Schmidt-Nielsen and J. Hoye. Svensk. Kem. Tid. 53, 287-90 (1941) through C. A. 36, 896-7 (1942).

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Bulletin 301. Pictures and describes Graver Pressure Filters. Explains general construction and contains specification tables for both horizontal and vertical types.

Bulletin 303. Fully describes the Graver Hot Process Water Softener. Also contains detail drawings of two types of equipment plus other interesting information.

Bulletin 307. Covers Graver Zeolite Water Softeners as well as six types of Graver Zeolites. Contains a series of six interesting flow diagrams covering softening of water with Graver Zeolites.

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PAPERMAKING PATENTS

IN THE UNITED STATES—Compiled by James Atkins, Registered Patent Attorney

Inquiries should be addressed to James Atkins, Munsey Building, Washington, D. C.

Method for Conditioning Paper

Patent No. 2,265,566. Theodore Makarius, Flushing, N. Y. Application July 22, 1940, Serial No. 346,874. 2 Claims. (Cl. 34—18). The method of restoring to normal hygroscopically affected marginal portions of paper sheets arranged in a pile, preparatory to and as they are being fed to a printing press, which consists in simultaneously directing radiant heat and jets of unheated air under pressure against the marginal portions of the uppermost sheets in the pile, thereby creating air spaces between said sheets giving access to the heat therebetween.

Cellulose Product

Patent No. 2,258,628. Allan K. Smith, Appleton, Wis., assignor to The Institute of Paper Chemistry, Appleton, Wis., a corporation of Wisconsin. Application December 30, 1936, Serial No. 118,275. 6 Claims. (Cl. 92—21). The steps in the method of preparing an improved absorbent paper sheet product of high temporary wet strength, increased dry strength and substantially free from age hardening and particularly adaptable for use as a paper towel, which comprises adding an aqueous dispersion consisting of gelatinized locust bean gum to a paper making furnish consisting essentially of wood cellulose fibers and forming the paper sheet containing locust bean gum dispersed therein from said furnish, the locust bean gum being present in amounts between 0.5 to 5.0 percent based on the dry weight of the furnish.

Papermaking Machine

Patent No. 2,254,297. Herman L. Kutter, Hamilton, Ohio, assignor to The Black-Clawson Company, Hamilton, Ohio, a corporation of Ohio. Application February 9, 1938, Serial No. 189,641. 4 Claims. (Cl. 92—45). In a Fourdrinier machine having a breast roll and a forming wire, a table section having a series of table rolls over which the wire travels, said section comprising a pair of spaced side rails supporting opposite ends of the table rolls each side rail having downwardly extending bracket projections arranged in pairs, flexible hangers arranged in pairs between said projections and secured at their lower ends to said bracket projections, and substantially horizontal stationary rail supporting beams one provided centrally below and adjacent each of the side rails between the bracket projections and each beam symmetrically connected at opposite sides thereof to the upper ends of a pair of said flexible hangers, and means for laterally vibrating said side rails.

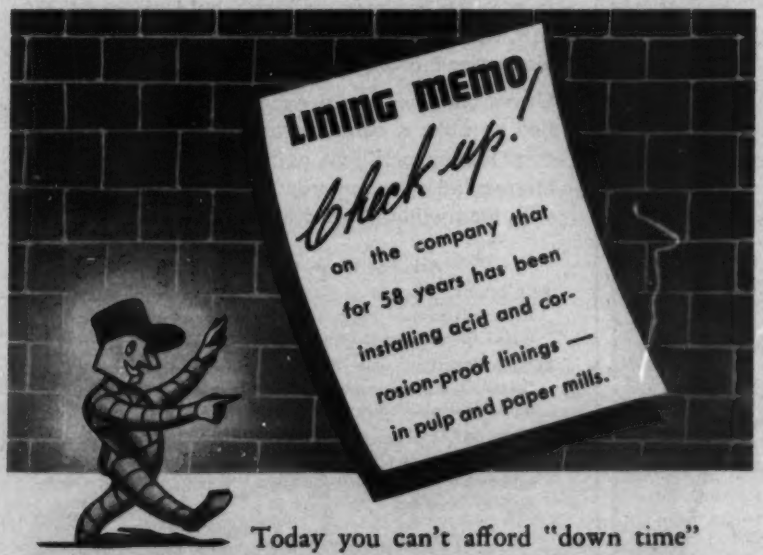
A Fourdrinier machine of the character described comprising a breast roll, means for shaking the breast roll, a sectional forming table extending outwardly from the breast roll, said table having an initial section having stationary side rails and table rolls rotatably supported thereon, a subsequent table roll section having roll supporting rails, carrying means for said roll supporting rails, spring means supporting said roll carrying rails from said carrying means for lateral vibratory movement and providing for substantial lateral vibratory movement of the terminal end thereof most remote from the initial section, means for laterally vibrating said roll supporting rails throughout their length, and a stationary suction box section immediately following a laterally vibratory end of said subsequent table roll section and having a series of suction boxes.

Recovery of Acids

Patent No. 2,231,898. Edward M. Frankel, Cedarhurst, Md., and Arthur Pollak, New York, N. Y., assignors to West Virginia Pulp and Paper Company, New York, N.Y., a corporation of Delaware. Application May 7, 1938, Serial No. 206,564. 20 Claims. (Cl. 260—541). In a method of deriving a free acid from a salt thereof, the steps which consist in subjecting said salt in the presence of sufficient water to maintain the reaction, to the action of a gaseous acid substance in the liquefied state in which the acid to be liberated is soluble and the salt formed by decomposition is relatively insoluble, which substance when dissolved in water at atmospheric pressure has a weakly acid reaction but which in liquefied form has sufficient acid reactivity under the stated conditions to decompose said salt and liberate the acid thereof, removing from time to time during the course of the reaction from the zone of reaction the liquefied gas containing the released acid in solution, and recovering therefrom said released acid.

Paper Machine

Patent No. 2,253,951. Karl Helge Tomtlund, Karlstad, Sweden, assignor to Aktiebolaget Karlstads Mekaniska Werkstad, Karlstad, Sweden, a company of Sweden. Application August 30, 1939, Serial No. 292,576. In Sweden August 31, 1938. 11 Claims. (Cl. 92—44). In a papermachine of the Fourdrinier type, the combination of a breast-roll, a wire-cloth running over said breast-roll, a breast-box, a pulp outlet nozzle on said breast-box for supplying pulp to said wire-cloth above said breast-roll, said outlet nozzle having a lower wall forming the upper boundary wall of an angle or gap between said outlet nozzle and the upward moving portion of said breast-roll, means enclosing said angle or gap at the ends of said breast-roll, and means located adjacent said upper boundary wall for directing at least one jet of a fluid medium, extending over sub-



Today you can't afford "down time" to repair or replace improperly designed and installed linings. Never was it more important to remember: "SEMCO" quality — is real economy.

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Stebbins Engineering and Manufacturing Company

EASTERN BLVD. WATERTOWN, NEW YORK

stantially the entire width of said breast-roll, substantially tangentially to the upwardly moving portion of said wire-cloth and in a direction substantially opposite to the direction of movement of said wire-cloth.

Paper Stock Hydrator

Patent No. 2,260,198. Charles W. Smith, North Muskegon, Mich. Application February 21, 1936, Serial No. 65,029. 8 Claims. (Cl. 92—24). The method of hydrating and beating stock comprising feeding the stock under pressure to a revolving beater roll and a bed plate, causing the stock to pass helically around and along the roll whereby it passes between the roll and the bed plate a plurality of times, feeding the stock still under pressure directly to a second revolving beater roll and a second bed plate, causing the stock to pass helically around and along said second roll whereby it passes between said second roll and bed plates a plurality of times, controlling the rate of passage of said stock along said first roll by controlling the rate of rotation of said second roll.

In an apparatus for beating and hydrating pulp stock, the combination of a beater roll with fixed stock engaging surfaces mounted for rotation and for vertical movement, a bed plate embracing an arc of the bottom half of the roll of an area sufficient that when high consistency stock under pressure is positively forced between the plate and the roll during rotation of the roll, the roll will be raised from the bed plate and will float on the stock between the roll and the bed plate, means for rotating the roll, and means for controlling the force exerted by the roll in opposition to the floating thereof on stock between the roll and the bed plate and means for forcing a stock under pressure between said roll and said bed plate.

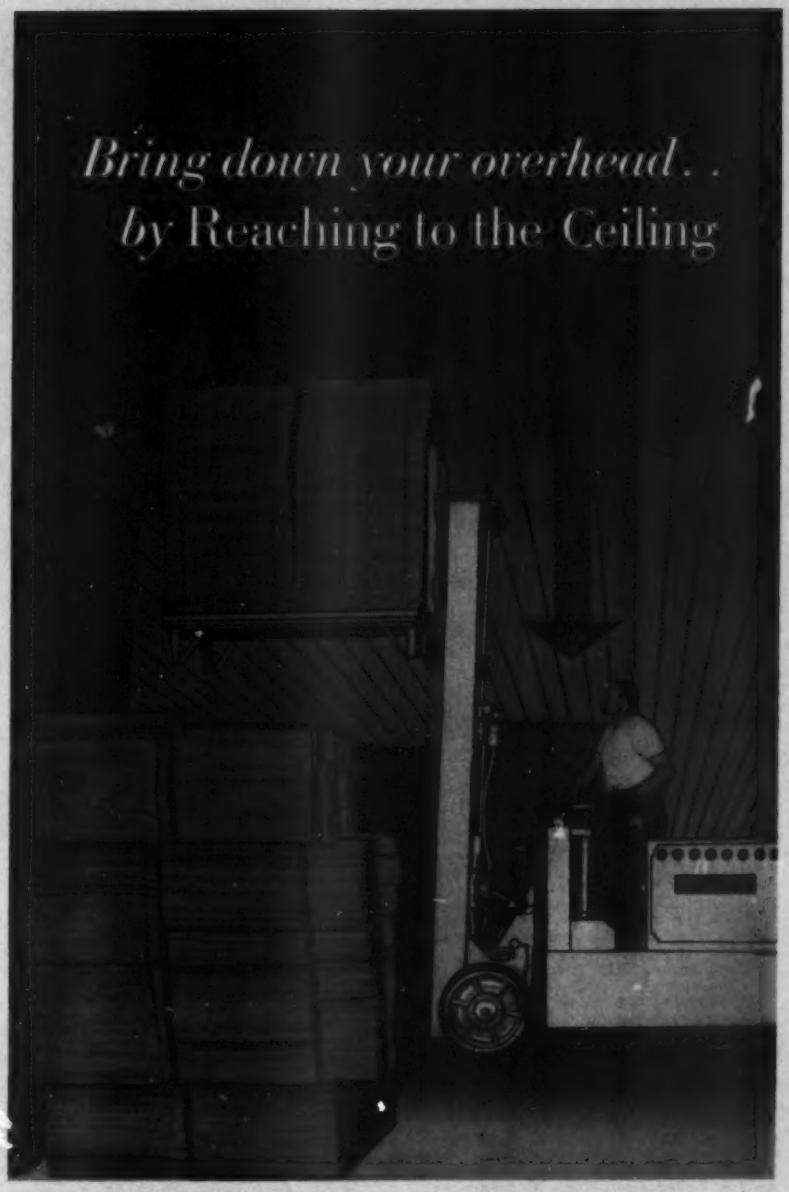
Process of Coating Paper and Product Thereof

Patent No. 2,263,576. William M. Glenn, Aurora, Ill., assignor to Glenn Davidson. Application June 14, 1939, Serial No. 279,170. 15 Claims. (Cl. 91—68). A process of making coated paper, which comprises bonding a vegetable proteinous suspension of mineral filler to paper by applying to the paper a sizing containing no vegetable proteinous material or cellulose, and subsequently applying the vegetable proteinous mineral filler on the sizing layer.

Paper Product

Patent No. 2,256,853. George L. Schwartz, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del., a corporation of Delaware. Application June 1, 1938, Serial No. 211,296. 1 Claim. (Cl. 91—68). A grease-resistant paper having a coating consisting of a mixture of clay, polyvinyl alcohol and thin boiling cooked corn starch in substantially the following proportions by percentage:

	Per cent
Clay	87.7
Polyvinyl alcohol	1.3
Thin boiling cooked corn starch	11.0



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Many users of Mercury equipment have reported savings in one year in excess of the cost of the equipment.

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Hydraulic Lift
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TRACTORS
TRAILERS
LIFT TRUCKS

New Catalogues and Publications

Paul O. Abbe, Inc., Little Falls, N. J.—This company states its new catalogue "T" is the most complete ever to be published on the subject of Ball Mills and Pebble Mills. The material is arranged in sections lettered B, C, D, and E, and the catalogue has been designed for practical service. The pages are loose leaf and the cover is a decorative paper binder. Each section contains illustrations of its subject matter and there are a number of illustrations of paper mill applications.

Allis-Chalmers Mfg. Co., Milwaukee, Wis.—A new bulletin, B6013A, graphically illustrates the functions of the Vari-Pitch Speed Changer, which it is claimed will step up production. Diagrams, operating data, and selection tables offer facts on speed changer units in sizes handling from 1½ to 75 hp. There are a number of illustrations of the newest applications.

American-Marietta Co., 43 E. Ohio St., Chicago—The Valdura Paint Selector just issued by this company is said to be one of the most unique charts of its kind ever compiled. The selector is in French fold, with booklet cover, and it makes available to architects, contractors, purchasing officials, and plant and building maintenance engineers all information on properties of, and all application data necessary to choose properly from 43 paint, enamel, and varnish products. The selector is composed of two charts, the use of which makes it possible to select quickly the right paint for almost any application. Valdura paints, of course, are products of this company.

S. Blickman, Inc., Weehawken, N. J.—"What to Look for When You Specify Stainless Steel Processing Equipment" is the title of this company's latest publication designed to help engineers select a grade of stainless steel. The other functions of this booklet are: to assist in determining the proper finishes for various types of processing equipment and to plan for designs which reduce the cost of equipment and at the same time conserve steel. Special information on round corner construction in processing vessels and facts about welding techniques are also included. This two-color book is profusely illustrated and extremely well arranged.

Brown Instrument Co., Philadelphia, Pa.—A new bulletin No. 29-34 is really a treatise on the Brown Deaerator Control System. There is a technical description of the principles involved, also application data. Schematic diagrams show how the system is hooked-up for boiler operation. Copies on request.

Chain Belt Co., Milwaukee, Wis.—Rex Belt Conveyors, Apron Conveyors, and Bucket Elevators are treated in a new catalogue just released. This is a very fine color job, profusely illustrated. And the "REX Man" makes some very interesting statements about the equipment featured.

Coleman Electric Co., Inc., New York City—A booklet entitled "When Precision is Vital" has just been sent out by this company. Coleman pH electrometers are illustrated and the various models are carefully explained. Many of the parts for the electrometers are also illustrated and described. Other instruments included are for medical use, for chemistry, and many other uses.

B. F. Goodrich Co., Akron, Ohio—How to obtain maximum service from truck tires is the subject discussed in the publication entitled "The Operator's Handbook." A 15-page section deals with "Factors Governing Truck Tire Service." There is a special section included giving charts and tables portraying the value of proper inflation and loads, the dangers in over- and under-inflation, mis-matching of dual tires, causes of uneven tread wear, and the effect of over-loads and excessive speeds in generating heat, prime enemy of rubber. Twenty rules are listed which will give the longest possible life to tires.

Johns-Manville, 22 E. 40th St., New York City—The 1942 edition of this company's catalogue of industrial products is now available. It contains 52 pages of information and recommendations on high and low temperature insulations for every industrial need, and is well illustrated. There is a large amount of specific data on the various products.

The Merian Co., Cleveland, Ohio—This company has just sent out an 8-page condensed catalogue (No. C-10) describing in compact form its line of U-type and well-type manometers, draft gauges, flow meters, mercury pressure gauges, tank gauges, and all accesories for measuring pressures, vacuums, and flows of liquids and gases. Illustrations of the equipment are included with descriptions of the equipment, suggestions for use, size ranges, dimensions, weights, list prices, etc.

Naugatuck Chemical Div. of U. S. Rubber Co., and Dispersions Process, Inc., Rockefeller Center, New York City—These companies have compiled for the use of their customers a handy reference work containing information from their experience with water dispersed rubbers. The subject matter is greatly condensed and classified as follows: Story of Dispersed Rubber, Lotol, Dispersite, Latex, General Handling Data, Machinery and Equipment, and Miscellaneous.

Pittsburgh Plate Glass Co., Pittsburgh, Pa.—A pamphlet entitled "Glass and Its Adaptability to Modern Needs" has been compiled by the technicians of this company in response to many inquiries as to the part glass might play in the present emergency. It contains a list of their products, a short description of each, availability information, properties, and a suggested list of uses. This company has also put out two bulletins on "Air Raid and Blackout Precautions for the Protection of Windows." These bulletins are based upon a study of experience and practice in Great Britain, plus certain experimental data developed in the United States.

Reeves Pulley Co., Columbus, Ind.—A new booklet (No. G-423) has just been issued illustrating and describing uses and applications for Reeves variable speed control equipment in defense industries and plants on many different types of machines. Increased production and decreased waste are stressed in the sixteen pages of this booklet.

Roller-Smith Co., Bethlehem, Pa.—Rotary type instrument, control, transfer, and auxiliary switches are described in the new rotary switch catalogue 7140. It contains diagrams of connections and switch developments for each switch listed, as well as indicating the face-plate markings for each switch and including illustrations of all standard faceplates.

The Selas Co., Philadelphia, Pa.—Bulletin 912 describes uses, sizes, porosities, filtering characteristics, and cleaning techniques; lists and illustrates the remarkably complete line of precision filter-crucibles, filter-candles, filter-cylinders, filter-funnels, and special shapes; gives bubbling pressures and porosity calculation for five available porosities. Unusual characteristics noted include: resistance to heat shock, ignition cleaning, high speed and selectivity, chemical inertness, and the ability to filter without pads or papers. A list of twenty-two laboratory supply houses handling the line is given on the back cover.

Books

Changes in Packaging Techniques—Thi paper-covered publication of the American Management Association, 330 W. 42nd St., New York, N. Y., may be considered as a symposium of five articles, namely: Standardization of Commodities in Containers, by Alex Pisciotta; Display as a Factor in Package Merchandising, by W. L. Stensgaard; Effect of War on British Packaging, by I. M. Sieff; Permeability of Fiber Containers to Water Vapors, by Warren E. Emley; and Versatility in Giving Mechanisms, by Dr. F. C. Campins. The price of this publication, obtainable through the American Management Association, is $1.00 a copy.

Two other publications of the same general make-up, recently released by the same Association, are: Technical Progress in Shipping Containers and The Economics of Packaging. The articles covered in the first of these two publications are: Trends in the Use of Lumber for Shipping Containers, by Ralph W. Marquis; Packing Specifications on Army and Navy Shipments, by Albert W. Luhrs; and Corrugated Board and Its Compound Parts as Engineering Materials, by T. A. Carlson. The second of these publications contains the following articles: A Case History of Informative Labeling, by Fred C. Hecht; Solving the Substitution Problem in the Oil Industry, by Walter Hochuli; The Economics of Packaging, by E. A. Throckmorton; The Bale of Hay and the Package, by Charles H. Lilienfeld; and The Consumer Looks at Packaging, by Mrs. Wilbur E. Fribley. Each of these latter two publications is priced by the Association at 75 cents a copy.

The Condensed Chemical Dictionary (Third Edition)—Completely revised and enlarged under the supervision of Thomas C. Gregory, Editor, this edition incorporates within its pages more than 6000 new items, also many new encyclopedic-type definitions, and, in addition, old items carried over from the previous edition have been brought up to date. The volume contains more than 750 pages; makes use of the same general arrangement as the second edition; and includes a large number of chemical specialties, sold under trade or brand names, as well as typical specifications of numerous products as marketed and sold commercially. Attractively bound in red cloth cover, the book is priced at $12.00 a copy by Reinhold Publishing Corp., 330 W. 42nd St., New York, N. Y., its publisher.

Modern Pulp and Paper Making (Second Edition)—More than twenty years have passed since the first edition of Modern Pulp and Paper Making appeared. Its author, George S. Witham, Sr., had completed most of his work on the second edition at the time of his passing in 1939 and now this volume has made its appearance. The present work is an unusually attractive book of more than 700 pages, bound in blue cloth cover with backbone printing in gold. It is a book of 20 chapters that have been arranged in very logical sequence. These chapters cover the materials from which pulp is made; the various operations in preparing the wood for conversion into pulp; the several chemical pulp making processes; the manufacture of groundwood; bleaching; the beater, machine and finishing rooms; converting and coating; paper defects; general design of pulp and paper plants; personnel and records; power plant; and testing of paper and paper materials. Mr. Witham in his preface to the second edition states, "I have tried to make the new edition truly 'up-to-date' but have not deleted descriptions of older equipment and processes likely to be found in many mills where my readers may be employed." Reinhold Publishing Corp., 330 W. 42nd St., New York, N. Y., publisher of the book, has priced it at $6.75 a copy.

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Centrifugally Cast

STAINLESS

CORROSION RESISTING

HEAT RESISTING

4" Misco "C" centrifugally cast pipe with Van Stone ends

"Keep 'em Flowing"

Wherever Misco "C" pipe is used there is a decided increase in service life. In every case, under actual operating conditions, Misco "C" pipe has proved its dependability by delivering maximum resistance to corrosion.

Misco "C" pipe is centrifugally cast in sizes from 2" to 20" O.D. with wall thicknesses of 1/4" upward and with plain, threaded or flanged ends. Specify Misco "C" pipe and fittings "to be sure."

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PAPER AND PULP SECTION

NATIONAL SAFETY COUNCIL, INC.

TWENTY NORTH WACKER DRIVE CHICAGO, ILLINOIS

CURRENT MARKET QUOTATIONS

RAGS (Domestic)
f. o. b. New York City

NEW RAGS

	per cwt.
Blue Overalls	5.75 to 6.00
Corduroy	2.75 to 3.00
Cottons—	
Washables, No. 1	2.75 to 3.00
Fancy Percales	4.15 to 4.35
New Soft Blacks	2.75 to 4.00
New Light Seconds	2.50 to 2.75
New Dark Seconds	2.25 to 2.50
Khaki Cuttings—	
Mixed	3.25 to 3.50
O. D.	4.00 to 4.25
New White Canvas	8.00 to 8.50
New Mixed Blacks	2.75 to 3.00
Shirt Cuttings	
New White No. 1	8.00 to 8.25
Silesias No. 1	5.25 to 5.50
New Unbleached	6.25 to 6.50
Fancy	3.25 to 3.50
Linen Cuttings—	
White	14.00 to 14.50
Gray	13.50 to 14.00

RAGS (Domestic)
f. o. b. New York City

OLD RAGS

OPA ceiling prices in sales to consuming mills f.o.b. cars at points of shipment, with brokers' allowances of $1 to $2 a ton depending on the value of the grade involved.

	per ton
Roofing—	
No. 1	31.00
No. 2	29.00
No. 3 and No. 4	27.00
Twos and Blues—	
Repacked	44.00
Thirds and Blues—	
Repacked	44.00
Miscellaneous	36.00
Whites, No. 1—	
Repacked	76.00
Miscellaneous	64.00
Whites, No. 2—	
Repacked	58.00
Miscellaneous	53.00

RAGS (Foreign)
ex dock New York City

NEW RAGS

	per cwt.
New Dark Cuttings	Nominal
New Mixed Cuttings	
New Light Silesias	
Light Flannelettes	
Unbleached Cuttings	
New White Cuttings	
New Light Oxfords	
New Light Prints	

RAGS (Foreign)
ex dock New York City

OLD RAGS

	per cwt.
No. 1 White Linens	Nominal
No. 2 White Linens	
No. 3 White Linens	
No. 4 White Linens	
No. 1 White Cottons	
No. 2 White Cottons	
No. 3 White Cottons	
No. 4 White Cottons	
Extra Light Prints	
Ord. Light Prints	
Med. Light Prints	
Dutch Blue Cottons	
French Blue Cottons	
French Blue Linens	
Checks and Blues	
Linsey Garments	
Dark Cottons	
Old Shoppers	

ROPE and BAGGING
f. o. b. and ex dock New York City

	per cwt.
Gunny No. 1—	
Foreign	Nominal
Domestic	4.00 to 4.25
Wool Tares—	
Light	4.00 to 4.25
Heavy	4.25 to 4.50
No. 1 Scrap Bagging	3.75 to 4.00
Manila Rope—	
Foreign	—
Domestic	*115.00-
New Burlap Cuttings	5.00 to 5.25
Jute Threads—	
Foreign (Nom.)	6.25 to 6.75
Domestic	5.50 to 6.00
Strings—	
Sisal	3.50 to 3.75
Soft jute	4.50 to 4.75
Mixed	1.25 to 1.50

*OPA ceiling price per ton f.o.b. shipping point.

WASTE PAPER

OPA ceiling prices in sales to consuming mills f.o.b. points of shipment East of Rocky Mountains; additional $1 a ton loaded on freight cars and brokers' commissions of 4 to 9 per cent allowed.

	per ton
Shavings—	
White Env. Cuts, One-Cut	67.50-
Hard White Env. Cuts	62.50-
Hard White, Unruled	57.50-
Hard White, Ruled	50.00-
Soft White, One-Cut	57.50-
Soft White, Misc.	43.00-
Fly Leaf, No. 1	32.50-
Fly Leaf, No. 2	22.50-
Fly Leaf, Woody, No. 1	35.00-
No. 2 Mixed Col. Woody	18.00-
Mixed Colored	15.00-
Flat Stock—	
Overissue Magazines	33.50-
No. 1 Heavy Magazines	31.50-
Mixed Books	30.50-
Ledger Stock—	
No. 1 White	43.50-
No. 1 Mixed (Colored)	37.50-
Manilas—	
New Env. Cuttings	53 00-
New Env. Cuts, One-Cut	37.50-
Extra Manilas	37.00-
Manila Tab Cards, Free of Ground Wood	45.00-
Colored Manila Tab Cards, Free of Ground Wood	30 00-
Ground Wood Manila Tab Cards	27.00-
Ground Wood Manila Tab Cards, Colored	20.00-
Kraft—	
Envelope Cuttings	55.00-
Mixed Env. or Bag Cuts	55.00-
Tripled Sorted No. 1 Brown	50.00-
New 100% Cor. Cuts	45.00-
No. 1 Old Assorted	35.50-
News—	
White Blank	32.00-
Overissue	17.00-
No. 1 Baled	15.00-
Old Corrugated Boxes	16.50-
New Corrugated Cuts	13.00-
Box Board Chips	14.50-
Dry Goods Waste	14.00-
No. 1 Mixed Paper	14.00-

CHEMICALS
f. o. b. shipping point

Alum (Papermakers)—	
Lump, cwt.	4.25-
Ground, cwt.	4.00-
Powdered, cwt.	4.40-
Blanc Fixe—	
Pulp, bulk, ton	40.00 to 46.00
Dry, barrels, pound	60.00 to -
Bleaching Powder—	
Drums, cwt.	2.25 to 3.10
Casein (Domestic Standard)—	
20-80 mesh (bags), lb.	27.00 to 27.50
80-100 mesh (bags), lb.	28.00 to 28.50
Argentine, lb.	24.00 to 25.00
China Clay—	
Domestic Filler	
Bulk (mine) ton	7.50 to 15.00
Domestic Coating	
Bulk (mine) ton	12.00 to 22.00
Imported (ship side)	
Bulk (lump) ton	15.00 to 36.00
Chlorine—	
Tank cars (wks) cwt.	2.00 to 2.25
Gelatine (silesia), lb.	.90 to .95
Glye. (C.P.) drums, lb.	18.50 to 18.75
Litharge, powd., bbl., lb.	.09 to -
Rosin (Gum)—	
New York, per 100 lbs.	
B	2.85-
F	2.85-
G	2.82-
WW	5.30-
Rosin (Wood), carlots	3.12-
Salt Cake—	
Dom. bulk (wks) ton	16.00 to 17.00
Imp. bulks on dock—	
(Atl. ports) ton (Nom.)	20.00 to
Soda Ash—	
Bulk (works), cwt.	.90 to .95
Paper Bags, cwt.	1.05 to 1.35
Barrels, cwt.	1.05 to 1.35
Soda (Caustic)—	
Solid, drums, cwt.	2.30 -
Ground and flake, drums, cwt.	2.70 -
Sodium Silicate—	
60 deg., 55 gal. drums, (works) cwt.	1.65 to 2.00
40 deg., 55 gal. drums, (works) cwt.	.80 to 1.45
Starch—	
Pearl, 140 lb. bags, cwt.	2.27-
Pearl, barrels, cwt.	2.37-
Paper (Sp.) bags, cwt.	2.37-
barrels, cwt.	2.47-
Sulphur (crude)—	
(mine) bulk, long ton	16.00 to 20.50
Talc—	
Dom. 100 lb. bags (mine) ton	15.00 to 20.00
Imp. bulk, ton (Nom.)	—
Titanium Dioxide—	
Barium Pig., bbls., lb.	.06½ to .06
Calcium Pig., bbls., lb.	.06 to .06½
Zinc Sulphide, bbls., lb.	.06½ to .06½

CHEMICAL PULP
(Air-dry ton)

	per cwt.
Soda (Dom.) del'd. mill—	
Bleached, contract	3.30 -
Open market	(nominal)
Sulphate (Dom.) f. o. b. mill—	
Bleached	4.25 to 4.50
Kraft No. 1	2.50 to 2.75
Kraft, Southern, del.	3.25 to 3.50
Sulphate (Imp.) on dock—	
Bleached	(nominal)
Kraft No. 1	(nominal)
Kraft No. 2	(nominal)
Sulphite (For.)	
On dock—	
Prime bleached	(nominal)
Prime easy bleach	(nominal)
Prime strong unbl.	(nominal)
Sulphite (Dom.)	
Bleached, contract	3.62½ -
Bleached, open market	(nominal)
Unbleached, contract	3.17½ -
Unbleached, open market	(nominal)

MECHANICAL PULP
(Air-dry ton)

	per ton
No. 1 Dom. & Can. (f. o. b. pulp mill)	31.00 to 34.00
No. 1 Imp. (On dock)—	
Moist	—
Dry	—

PAPER
f. o. b. New York City

	per ton
Boards—	
Binders	80.00-
Chip	45.00-
Chip, sgl. mis. lined	60.00-
Coated, white patent	
.010	80.00-
.020 and heavier	75.00-
Kraft liner	60.00-
News	45.00-

	per cwt.
Book (coated)	
No. 1 Coated	15.50-
No. 2 Coated	14.00-
No. 3 Coated	13.25-
No. 4 Coated	12.75-
No. 2 Offset	11.75-
A Grade Super	10.75-
B Grade Super	10.25-
Bonds (Rag Content)—	
100% Rag	
Ext. No. 1	42.75 to 47.25
100% Rag	35.00 to 37.75
85% Rag	
75% Rag	28.00 to 29.00
65% Rag	
50% Rag	20.50 to 22.75
25% Rag	18.25 to 20.00
Regular Colors	1.00 cwt. extra
Bonds (Sulphite)—	
No. 1	11.70-
No. 2	10.75-
No. 4	9.90-
Colors	1.00 cwt. extra
Glassine (f. o. b. mill)—	
Embossed (25 lb. up)	14.00 to 14.25
Bleached (25 lb. up)	12.75 to 13.25
Unbleach. (25 lb. up)	11.50 to 12.00
Greaseproof—	
Bleach. (25 lb. up)	11.00 to 11.50
Unbleach. (25 lb. up)	10.00 to 10.50
Ledgers (Rag Content)—	
100% Rag	
Ext. No. 1	41.40 to 48.80
100% Rag	36.25 to 39.25
85% Rag	32.20 to 37.75
75% Rag	28.15 to 30.50
65% Rag	23.80 to 27.75
50% Rag	22.10 to 24.25
25% Rag	19.50 to 21.50
Regular Colors	1.00 cwt. extra
Ledgers (Sulphite)—	
No. 1	13.00-
No. 2	12.05-
No. 4	11.20-
News—	per ton
Rolls (Contract)	50.00-
Rolls (Spot)	(nominal)
Sheets	55.00 -

	per ream
Tissues (Carlots)—	
White, No. 1	1.12½
White, No. 2	.95-
Bleached Anti-Tarnish	1.20-
Colored	—
Anti-Tarnish Kraft	1.10-
Manila	.90 to .95
Napkins, semi-crepe (12½ lb. to M shts.) per ea	.60 -
Napkins, full crepe and emb'ssed (12½ lb. to M shts.) per ea.	.60 -
Toilet, Bleached (M shts.) per ea.	5.65 -
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	per case
Towels—	
Bleached	3.20 to 3.75
Unbleached	2.60 to 3.05

	per cwt.
Wrappings (Kraft)—	
Extra Quality	6.00 to 7.00
Super-Standard	5.25 to 6.25
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Southern Standard	4.75 to -
Wrappings (Sulphite and Bleached Kraft)— (Rolls, f. o. b. mill)	
Bleached papers—	
M.F.& M.G. Waxing	per cwt.
20 lb. (Carloads only)	7.25 to 7.50
(10,000 lbs.)	7.50 to 7.75
Drug wrapp. 35 lb.	7.00 to 7.25
Unbleached Papers—	
Com. Grd. Butch. 40 lb.	5.25 to 5.50
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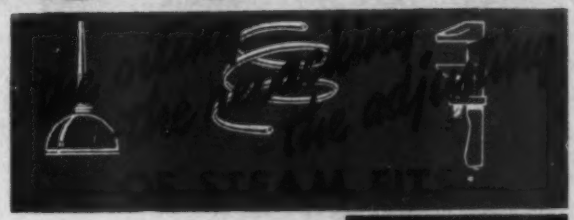


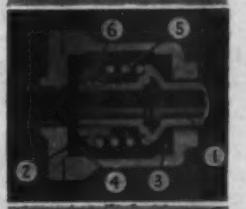
HOW would you like to put an end to all the time and money wasting troubles of your old stuffing-box type of steam fits? There is a way, a simple, sure-fire way, that has been adopted by hundreds of paper mills all over the country—the Johnson Rotary Pressure Joint.

The Johnson Joint has no packing at all to wear out, never needs to be oiled, and adjusts itself automatically to varying pressures. The unique design also provides a lateral and angular flexibility that absorbs misalignment without loss of operating efficiency—ending what is perhaps the most frequent cause of trouble with the old style steam fits.

Besides being a better way to get steam into paper machines, calenders and corrugators, the Johnson Joint offers a simpler, more workmanlike way to provide for syphon drainage of rolls. The same freedom of lateral movement which compensates for misalignment keeps syphon pipe from rubbing on dryer rolls.

You will find conclusive proof of the merit of the Johnson Joint in the rapid acceptance that has greeted it. Though introduced less than 10 years ago, there are 50,000 Johnson Joints in service today. Over a hundred paper mills now use 50 or more Johnson Joints; over fifty mills have purchased from 100 to as many as 800.

Close-up view of two Johnson Joints as installed. No more steam or troubles here.



The Johnson Rotary Pressure Joint

Nipple (1) fastened to roll. Sliding collar (2) keyed (6) to nipple. Carbon graphite seal ring (3) and bearing ring (4) which eliminate oiling and packing. Spring (5) is for initial seating only—joint is actually pressure sealed.

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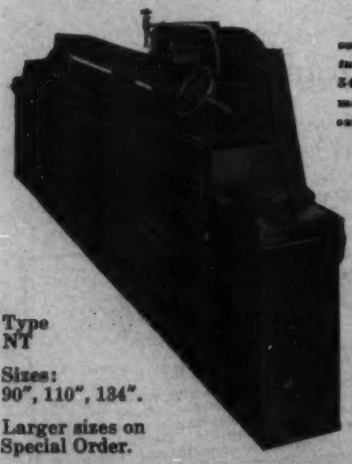

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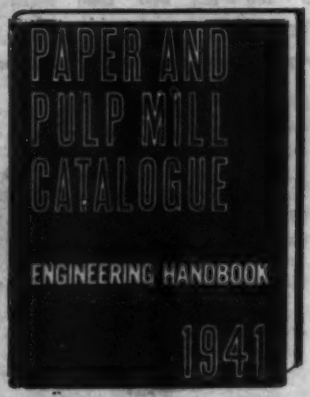

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